# Annual Report 2004

*The CALFED Bay-Delta Program is the largest and most comprehensive water management and ecosystem restoration program in the nation.*

CALFED BAY-DELTA PROGRAM

# Reference Documents

**CALFED Re-authorization Bill (H.R. 2828)**

**California Bay-Delta Authority Act 2003**

**California's Water Future: A Framework for Action – June 9, 2000**

**ERP Draft Stage 1 Implementation Plan**

**Final Programmatic Environmental Impact Statement/Report (EIS/EIR) – July 21, 2000**

- Main Document (Impact Analysis) – 1,200 pages
- Executive Summary of EIS/EIR Main Document – 40 pages
- Phase II Report – 200 pages
- Implementation Plan – 190 pages
- Ecosystem Restoration Program Plan – 1,200 pages, four volumes
- Levee System Integrity Program Plan – 500 pages
- Water Quality Program Plan – 300 pages
- Water Use Efficiency Program Plan – 190 pages
- Water Transfer Program Plan – 100 pages
- Watershed Program Plan – 100 pages
- Multi-species Conservation Strategy – 500 pages
- Comprehensive Monitoring Assessment & Research Program Plan – 150 pages
- Response to Comments – 1,500 pages, three volumes

**Record of Decision – August 28, 2000**

**Year 4 Program Plans**

*These documents are available on CD or on our website:* **www.calwater.ca.gov**

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## CALFED Agencies

### California

The Resources Agency
- California Bay-Delta Authority
- California State Parks
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- Department of Conservation
- San Francisco Bay Conservation and Development Commission

California Environmental Protection Agency
- State Water Resources Control Board

California Department of Health Services

California Department of Food and Agriculture

### Federal

Department of the Interior
- Bureau of Reclamation
- Fish and Wildlife Service
- Geological Survey
- Bureau of Land Management

Environmental Protection Agency

Army Corps of Engineers

Department of Agriculture
- Natural Resources Conservation Service
- Forest Service

Department of Commerce
- National Marine Fisheries Service (NOAA Fisheries)

Western Area Power Administration

CALFED BAY-DELTA PROGRAM

*The CALFED Bay-Delta Program is a collaborative effort among 25 state and federal agencies to improve water supplies in California and the health of the San Francisco Bay-Sacramento-San Joaquin River Delta Watershed. In 2000, the agencies drafted a 30-year plan described in the CALFED Record of Decision. The plan sets general goals and describes a science-based planning process through which the agencies can make better, more informed decisions on future projects and programs within their jurisdictions.*

*In 2002, the California Legislature passed the California Bay-Delta Authority Act that adopted the plan's objectives as state policy. The Bay-Delta Authority Act also created a new state agency, the California Bay-Delta Authority, to oversee implementation of the Program. In 2004, Congress passed the Water Supply Reliability and Environmental Improvement Act that adopted the plan as a general framework for the federal agencies.*

*The Bay-Delta Authority provides the agencies a forum to share information, resolve disputes, measure their cumulative progress and maintain a shared vision of the future. The fundamental notion of the Program is that each agency can better meet its individual responsibilities when it understands how its actions affect, and are affected by, the other agencies. Each agency makes decisions on specific projects according to its discretion under state or federal law. This report describes the agencies' progress thus far.*

# INTRODUCTION



Now in its fourth year of implementation, the CALFED Bay-Delta Program is a national model of collaborative resource management. This year's annual report documents the tremendous range of activities underway as our state, federal, and local agencies and stakeholders continue to work towards addressing California's most pressing water needs.

In 2004, the Bay-Delta Authority achieved several important milestones:

- After several years of debate, Congress passed legislation authorizing federal participation in the Authority and $389 million for key program elements over the next six years.
- The Authority adopted a long-term finance plan to serve as the framework for investment decisions in water infrastructure and the environment.
- The Authority adopted the Delta Improvements Package, an integrated set of schedules and actions to ensure that water supply reliability, water quality, and environmental improvements in the Delta move forward in a balanced manner.
- For the fourth consecutive year, the CALFED agencies provided increased flows for threatened and endangered fish through an innovative Environmental Water Account, while also providing regulatory commitments to the state and federal water projects that their supplies would not be interrupted during the year.
- Based on the recommendations of independent panels of national experts, the Authority adopted a comprehensive mercury strategy and a blueprint for improving water measurement and reporting urban and agricultural water supplies.
- And finally, CALFED agencies invested more than $1.6 billion in local communities to meet the water supply, water quality, levee stability, and environmental goals of the Program.

Of course, water conflicts will always be with us as long as California continues to grow and supplies remain limited. But with a new federal mandate and a finance plan to guide our expenditures, the Authority is now much better positioned to work with our federal, state, and local partners to manage these conflicts and build on our accomplishments in the years ahead.

**Gary Hunt**
*California Bay-Delta Authority*
*Bay-Delta Public Advisory Committee*

# STATEMENT OF PROGRESS & ACCOMPLISHMENTS

The CALFED Record of Decision (ROD) and state and federal legislation require an annual review of the progress of the CALFED Program and an annual report to the California Legislature and Congress on the implementation status of all elements of the CALFED Program for the prior fiscal year. This summary statement highlights Program accomplishments and progress in 2004, Year 4 of implementation of the CALFED ROD, and the last four years.

In its 2003 report, the Authority noted that four program areas – water quality, agricultural water use efficiency, levee system integrity, and science – were behind schedule due to funding shortfalls. In the year since that report was issued, funding from Proposition 50 has been made available to provide support for all program areas, including those four considered furthest behind schedule. Although some Proposition 50 funds are not programmed directly for some CALFED projects such as drinking water quality, the Authority is able to report significant progress in 2004. With the passage of federal authorization for the CALFED Program in October 2004 and the potential for increased federal appropriations, the outlook for continued progress in 2005 and beyond is encouraging.

## Program-Wide Accomplishments

### Federal Authorization

In October 2004, President Bush signed legislation authorizing the federal agencies to implement CALFED-related activities already authorized, and authorizing an additional $389 million in federal appropriations for the CALFED Bay-Delta Program over the next six years. The legislation ensures the ongoing participation of federal agencies in the Authority and implementation of the CALFED ROD, and authorizes critical funding for a wide array of programs to improve water quality, water supply reliability, Delta levee integrity, and ecosystem health.

### Delta Improvements Package

CALFED agencies made significant progress in 2004 toward improving water supply reliability, water quality, Delta levee stability, and ecosystem protection through a suite of coordinated actions known as the Delta Improvements Package. The Authority in August 2004 adopted a plan for implementing these actions in a manner that ensures public input, accountability and compliance with environmental and water quality commitments. The Delta Improvements Package specifies conditions that would allow the State Water Project (SWP) to increase permitted pumping capacity from its Delta pumping plant. The conditions are designed to provide water supply reliability for export water users while meeting Delta water quality standards and continuing the recovery of key native fish species dependent on the Delta.

### Finance Plan

The Authority adopted a Finance Plan in December 2004 that proposes budget and funding priorities for the next decade of CALFED implementation. Developed with extensive input from stakeholders, CALFED agencies, and the public, the plan identifies estimated funding targets for CALFED programs, existing funding available to meet those targets, and sets forth a set of finance tools to fill the gaps. The plan also proposes specific funding allocations for the state and federal governments, water users, and local entities.

### Extension of the Environmental Water Account and Program-Level Regulatory Commitments

After a comprehensive review of progress toward ecosystem restoration milestones and the efficacy of the Environmental Water Account, the CALFED agencies in September 2004 agreed to extend for three additional years the innovative Environmental Water Account, as well as regulatory commitments to continue state and federal Delta water exports without additional reductions to protect key fish species. Based on this review, the state and federal fish and wildlife agencies found that the CALFED Program is in compliance with the environmental commitments made in the CALFED ROD.

## Multiple Benefits

Because many of the problems facing the Bay-Delta system are interrelated, CALFED agencies are committed to implementing long-lasting solutions that address multiple areas. For example, many ecosystem restoration projects funded by CALFED agencies provide water quality and/or water supply improvements in addition to environmental benefits. Nearly 80 percent of the $2.9 billion invested in CALFED programs in the first four years has gone to efforts that contribute to multiple program objectives.

### Multiple Benefits in CALFED Projects

| Program Element | Project Grouping | Benefit: Water Supply | Water Quality | Ecosystem Restoration | Levees |
|---|---|---|---|---|---|
| Conveyance | Barriers | ■ | ■ | | |
| | Flood/eco | | | ■ | |
| | South of Delta | ■ | ■ | | |
| | Through Delta | ■ | ■ | ■ | |
| Drinking Water Quality | Source | | ■ | ■ | |
| | Treatment | | ■ | | |
| Ecosystem Restoration | Channel/Sediment/Floodplain | | | ■ | |
| | Ecosystem Water Quality | | ■ | ■ | |
| | Fish Screens and Passage | ■ | | ■ | |
| | Flows | | | ■ | |
| | Habitats | ■ | | ■ | ■ |
| | Nonnative | | | ■ | |
| Environmental Water Account | Acquisitions | ■ | | ■ | |
| Levees | Special Projects | ■ | ■ | ■ | ■ |
| | Subventions | ■ | ■ | ■ | ■ |
| Storage | Groundwater | ■ | | | |
| | Surface Water | ■ | ■ | ■ | |
| Water Transfers | Transfers | ■ | | | |
| Water Use Efficiency | Ag | ■ | ■ | ■ | |
| | Recycling | ■ | | | |
| | Urban | ■ | | | |
| Watershed | Community-based Management | ■ | ■ | ■ | |

## Program Element Accomplishments

### Delta Levee System Integrity

In 2004, the unanticipated flooding of Jones Tract in the Delta brought new focus and urgency to the issue of Delta levee stability. The Department of Water Resources has launched a multi-year study to evaluate the potential risk of Delta levee failure as a result of sea level rise, continued land subsidence and the potential for earthquakes. In addition, in response to the Jones Tract flooding, DWR is developing a proposed plan for a comprehensive reassessment of the Delta Levee Program that may lead to changes in the strategy for managing and improving Delta levees.

# STATEMENT OF PROGRESS & ACCOMPLISHMENTS

Because Proposition 50 funds available to support levee activities will be fully expended next year, the CALFED Finance Plan identified a two-year budget shortfall for the Levee Program. As a result, new federal funding for the program will be critical and state general fund dollars may be needed in the near-term to ensure continued progress. The federal authorization for CALFED signed by President Bush in October 2004 authorized $90 million in appropriations for the U.S. Army Corps of Engineers for Delta levee improvements.

During the first four years of CALFED ROD implementation, the Delta Levee Program:

- Preserved more than 650 miles per year of Delta levees through the Delta Levees Subvention Program and made minor improvements while enhancing the Delta environment.
- Increased levee stability on 43 miles of Delta levees.
- Reused approximately 900,000 cubic yards of dredge material for levee stability and habitat enhancement.
- Researched and conducted pilot studies on subsidence and subsidence reversal and improved emergency response.

## Conveyance

The Delta Improvements Package was adopted by the Authority in August 2004. This package includes several important conveyance projects, including increased State Water Project permitted pumping capacity from the Delta to 8,500 cubic feet per second, construction of permanent operable barriers in the south Delta, and construction of an intertie between the State Water Project and the Central Valley Project. Under the guidance of the Science Program, significant research has been conducted and new information developed regarding the movement of fish, sediment, and salt in the Delta that will help guide operations of Delta facilities to better protect fish and water quality while providing reliable water supplies. Specifically:

- Several studies on Delta Cross Channel re-operation and Through-Delta Facility projects have been conducted to evaluate the potential of improving Delta water quality and fishery protection.
- Research is being conducted on the collection, handling, transport, and release of fish salvaged at the Delta pumping plants to provide additional information on the impacts of the state and federal water projects on fish populations.
- Studies began in 2004 to provide information on the hydrodynamics of the central and south Delta regions, the effects on fish transport and water quality, and the potential improvements to Delta operations and management strategies.
- Agencies and stakeholders are working with scientists to re-evaluate the approach to screening at the state and federal facilities in the Delta through the South Delta Fish Facilities Forum.

## Storage

Work has progressed on surface storage investigations for all five projects under investigation, and additional work needs to be completed before decisions can be made on which projects should be constructed. In March 2004, voters in Contra Costa County approved a ballot measure to move forward with studying Los Vaqueros reservoir expansion.

The Department of Water Resources has prioritized its work to focus remaining state resources on identifying the most viable projects. As part of the federal planning process, four of the five investigations (North-of-Delta offstream storage, Shasta enlargement, Los Vaqueros expansion, and Upper San Joaquin storage) have either completed or begun their Initial Alternative Reports. The fifth project (In-Delta Storage) has completed a draft state Feasibility Study. Environmental documentation processes have begun on three of the projects (North-of-Delta offstream storage, Upper San Joaquin storage, and In-Delta storage). Using this information, the Storage Program will develop partnerships with potential participants to advance alternatives development and plan formulation. The Storage Program also developed a Common Assumptions effort to standardize methods and models necessary for hydrologic, water quality, and economic analysis.

Through Propositions 13 and 50 and the general fund, the Department of Water Resources has funded, statewide, more than $240 million for more than 160 local groundwater storage and conjunctive use studies and projects. Award of Proposition 13 groundwater storage and recharge construction funding was completed in 2004. A total of 163 groundwater storage and recharge projects with an expected annual average yield of over 300,000 acre-feet were funded. The local cost share on these projects is approximately $900 million. Improvements in groundwater management and construction of conjunctive use projects will benefit water supply reliability, the Environmental Water Account, ecosystem restoration, water transfers, and other CALFED programs.

## Watersheds

During the first four years of CALFED ROD implementation, the CALFED agencies:

- Funded 118 watershed projects totaling $51.1 million. These projects have addressed a variety of goals including water quality, flood management, and ecosystem restoration at the local scale.
- Supported 49 watershed coordinators throughout the state.
- Developed watershed assessments on 4,652 square miles (nearly 3 million acres) of the Bay-Delta watershed.
- Completed a comprehensive review of the first 54 projects funded showing that CALFED watershed projects are making significant contributions toward improved water quality, water supply reliability, and ecological health.

## Water Quality

In 2004, stakeholders and CALFED agencies worked closely to make Proposition 50 funding available for projects that may contribute to CALFED water quality objectives. Lack of consistent funding in previous years prevented the program from making significant headway on water quality goals described in the CALFED ROD.

During the first four years of CALFED ROD implementation, the CALFED agencies:

- Invested in projects to improve water quality for drinking water and ecosystems and promote watershed management, including:
  - More than $80 million for 63 drinking water quality projects to improve drinking water quality, ranging from source improvement, regional water investigations and exchanges, conveyance improvements, treatment demonstrations and research across the state.
  - More than $70 million for 58 ecosystem restoration projects to identify and reduce contaminants such as mercury that can bioaccumulate and affect aquatic life, wildlife and humans who consume fish.
  - More than $40 million for more than 100 water shed projects to provide overall improvement of water quality through watershed stewardship throughout the Bay-Delta and its tributaries.
- Approved a comprehensive Mercury Strategy that will guide and integrate the management and research of mercury in the Bay-Delta system. The strategy is considered one of the most comprehensive of its kind in the country.
- Initiated development of comprehensive plans that will guide management of salinity and related impacts on drinking water quality and dissolved oxygen that affect salmon on the San Joaquin River.

## Environmental Water Account

In its first four years, the Environmental Water Account has been successful in providing fisheries protection and water supply reliability benefits. EWA agencies acquired 155,000 acre-feet of water in Year 4. In the first four years, more than 1 million acre-feet of water has been used to protect fish and maintain deliveries to cities and farms. In September 2004, the implementing agencies extended the EWA for an additional three years. The fourth annual technical review of EWA operations was held in November 2004.

# STATEMENT OF PROGRESS & ACCOMPLISHMENTS

## Water Use Efficiency

In the first four years, the CALFED agencies provided more than $160 million in grants, loans and technical support for local water conservation and recycling projects that contribute to the goals of the Program. To date, projects funded through the Water Use Efficiency Program are expected to result in an annual water savings of nearly 50,000 acre-feet of conserved water, and recycle more than 400,000 acre-feet. In April 2004, the Authority adopted a comprehensive set of recommendations to improve measurement of urban and agricultural water use and authorized the director to work with the State Administration and the Legislature to develop legislation to implement the recommendations.

## Water Transfers

The program is on track, assisting in the transfer of more than 700,000 acre-feet of water in 2004, including water for the Environmental Water Account. In the first four years of the CALFED Program, over 3.5 million acre-feet of water was transferred for the Environmental Water Account, DWR Dry Year Program, CVPIA Transfers, and the Colorado River Contingency Plan. The On Tap web site is operational and has been updated.

## Ecosystem Restoration

Since its inception seven years ago, the Ecosystem Restoration Program has made significant improvements in the habitats and species associated with the Bay-Delta and its watersheds. The CALFED agencies have:

- Invested more than $500 million on 415 projects aimed at improving and restoring ecosystems.
- Worked with the Science Program to complete the "Mercury Strategy for the Bay-Delta Ecosystem: A Unifying Framework for Science, Adaptive Management, and Ecological Restoration" (Mercury Strategy).
- Released a request for grant proposals to provide funding to continue monitoring and evaluating previously funded restoration projects. Funding decisions are expected in late 2005.

In 2004, the Ecosystem Restoration Program implementing agencies completed a comprehensive assessment of the overall status of the Ecosystem Restoration Program towards achieving the Multi-Species Conservation Strategy milestones listed in the ROD. This assessment found that progress on nearly 80 percent of the milestones was on or ahead of schedule. This progress was sufficient to allow the state and federal regulatory agencies to continue coverage under the federal Endangered Species Act and state Natural Community Conservation Planning Act for the entire CALFED Program and contributed to their continuing the program-level commitments.

## Science

The Science Program in 2004 continued its intensive effort to improve the understanding of the Bay-Delta system by organizing workshops and symposia and launching a peer-reviewed online journal that highlights relevant local research and monitoring. In addition, the Science Program:

- Conducted the fourth annual EWA technical review that looked at the past four years of EWA operations and provided information that will be used in the development of the long-term EWA.
- Held the third CALFED Science Conference in Sacramento in October 2004. More than 1,200 participants attended to hear the results of CALFED supported research.
- Released a request for grant proposals in October that will provide funding for research on key science questions associated with the CALFED Program. Funding decisions are expected in late 2005.

The Science Program continues to support the Independent Science Board and provides assistance with the development of program and issue specific science advisory groups. A new Water Management Science Board was established in 2004 and will meet for the first time in January 2005.

## Oversight & Coordination

Federal authorization for implementing the CALFED Program was provided by Congress and signed into law by the President on October 25, 2004. This six-year authorization allows the federal agencies to participate in the Authority as non-voting members, and authorizes appropriation of $389 million for CALFED-related activities.

In addition, the Authority:

- Provided an important public forum for discussions and integration of finance issues, Delta water project operations, science activities, and agency grant awards.
- Prepared a Finance Options Report and led the effort to develop a Finance Plan for the entire Program.
- Continued support for the California Bay-Delta Public Advisory Committee that provides recommendations to the Secretary of the Interior, other participating federal agencies, the Governor and the Authority on implementation of the CALFED Program.
- Coordinated implementation of environmental justice and tribal activities across all Program elements and agencies.
- Continued development of draft regional profiles that provide information on regional water use and needs, funding, priorities and opportunities to build state, federal, and local partnerships to maximize regional and statewide benefits. These profiles were developed in coordination with Department of Water Resource's State Water Plan Update.
- Provided oversight for the preparation of multi-year Program plans, perpared by the implementing agencies, that define priorities and schedules for implementation of the CALFED Program.

### Year 5 and Beyond

To ensure ongoing balanced implementation of the CALFED Bay-Delta Program, priorities for 2005 include:

Finance Plan – Implement the Finance Plan, including the identification of cost-sharing partners consistent with the beneficiaries-pay approach, to support Program implementation. Under the new federal authorization, support adequate federal appropriations and continue to coordinate Proposition 50 grants and loans to ensure progress in all areas of the CALFED Program.

Delta Improvements Package – Implement the Delta Improvements Package, including progress toward increased permitted pumping capacity at the State Water Project Delta pumping plant while continuing to meet Delta water quality standards and protect key native fish populations.

Levee Assessment – Undertake a comprehensive reassessment of the Delta Levee Program to address the risks facing the Delta and how the Delta levee system will be managed in the future.

Performance Measures – Establish appropriate performance measures to evaluate how well specific program elements are meeting the objectives of the CALFED Plan.

Water Measurement Legislation – Support the adoption of water measurement legislation that will result in the collection of critical water use information and provide information to support water management decisions.

Water Quality Planning and Implementation – Complete the Water Quality Strategic Plan and the salinity and dissolved oxygen management plans that will guide local and public water quality investments and improvements. Develop an Implementation Work Plan based on the Mercury Strategy.

Regional Profiles – Continue refinement of regional profiles to provide insight into regional water use and needs, regional funding, regional priorities and opportunities to build state, federal and local partnerships to maximize regional and statewide benefits.

# PROGRAM OVERVIEW

## Why Focus on the Bay-Delta

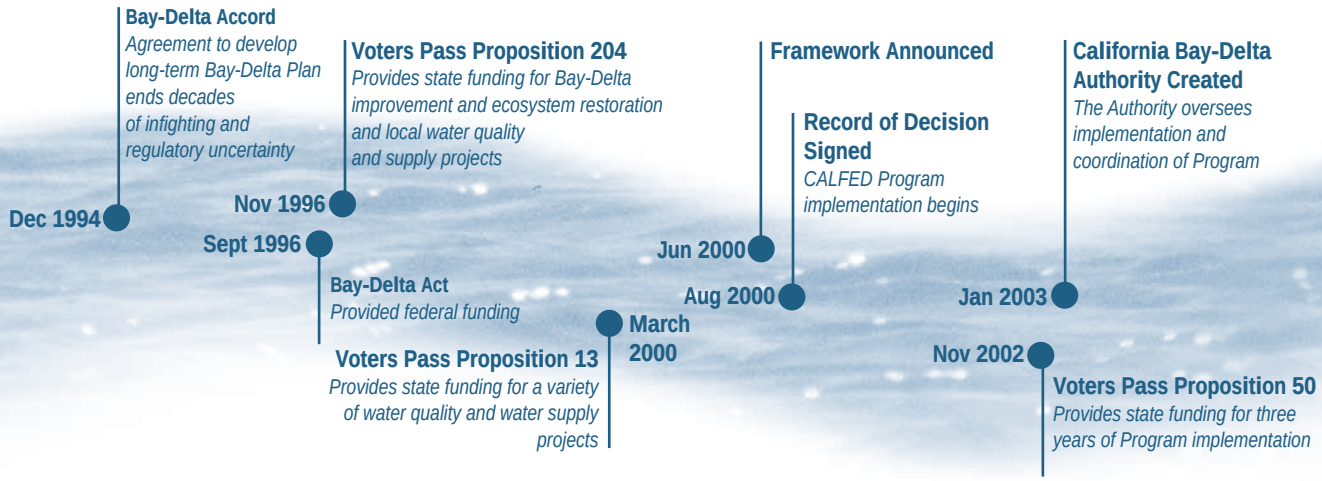
The Bay-Delta is one of California's unique and valuable resources. The Bay-Delta system provides drinking water for 22 million people and is an integral part of California's water system. It supports California's trillion dollar economy, including its $28 billion agricultural industry. Its levees protect farms, homes and infrastructure. It is the largest estuary on the West Coast and is home to 750 plant and animal species. The Bay-Delta supports 80 percent of the state's commercial salmon fisheries.

The Bay-Delta has been in decline for decades. Growth and development in California have increased demands on the Bay-Delta for water supply. At the same time, the health of the Bay-Delta ecosystem has deteriorated and populations of important fish species are at risk. The CALFED agencies working with local partners are implementing hundreds of projects to improve the quality and reliability of the Bay-Delta system. As a result, conflict in the Delta has been reduced. Water supplies are becoming more reliable, water quality issues are gaining the attention they deserve, and the Bay-Delta environment is showing some favorable responses.

## The CALFED Bay-Delta Program

In August 2000, the CALFED Bay-Delta Program agencies issued a Programmatic Record of Decision (ROD) that set forth a 30-year plan to address ecosystem health and water supply reliability problems in the Bay-Delta. The document laid out specific actions and investments to meet Program goals and described a strategy for implementing the Plan. The Program addresses four interrelated, interdependent resource management objectives concurrently:

### California Bay-Delta Program Timeline



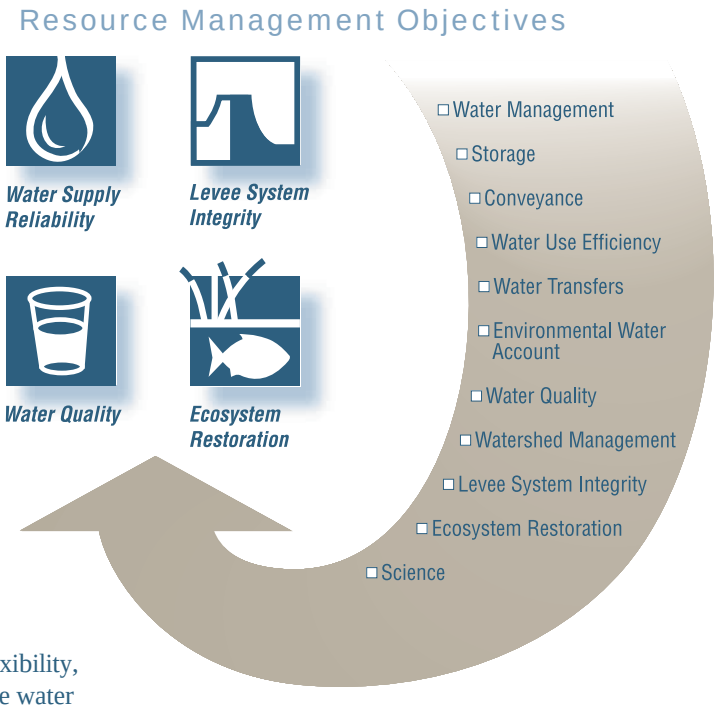
Water Supply Reliability

Water Quality

Ecosystem Restoration

Levee System Integrity

The Program's four objectives are further addressed through 11 major program elements as a way of sustaining the CALFED Plan's balanced and comprehensive approach. The following is a summary of the major components of the CALFED Plan:

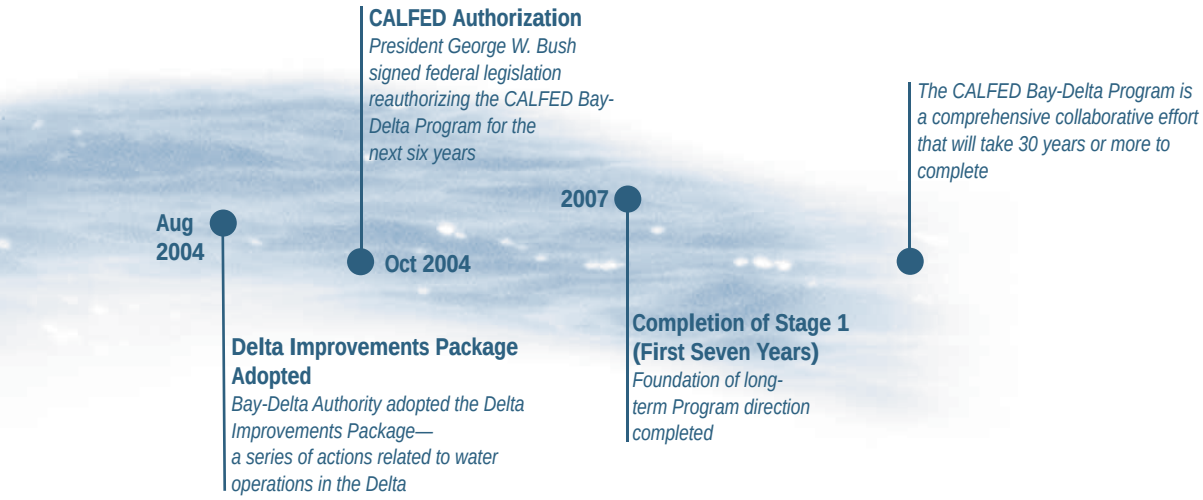



## Water Supply Reliability

- Assist local partners in developing 500,000 to 1 million acre-feet of groundwater storage.
- Pursue planning and other actions at state and federal levels to expand surface storage capacity by up to 3.5 million acre-feet.
- Optimize water conveyance facilities in the Delta and in other locations to maximize operational flexibility, protect water quality and fish species, and increase water supply reliability.
- Invest in local projects that boost water use efficiency through annual water conservation and recycling competitive grants and loan program.
- Streamline the water transfer approval process and develop an effective water transfer market that protects water rights, the environment and local economies.

## Water Quality

- Develop and implement source control and drainage management programs.
- Invest in treatment technology.
- Implement aggressive measures to improve Delta water quality and water quality science.



# PROGRAM OVERVIEW

- Improve or maintain water and sediment quality to support healthy and diverse aquatic ecosystems and to the extent possible, eliminate toxic impacts to aquatic organisms, wildlife and humans.
- Improve dissolved oxygen conditions in the San Joaquin River near the Port of Stockton as part of ecosystem restoration efforts.

## Ecosystem Restoration

- Conduct a grant program to fund local projects in habitat restoration, fish passage, invasive species management and environmental water quality.
- Recover at-risk native species and their habitats.
- Augment stream flow in upstream areas to benefit native fish and invest in fish passage improvements through dam removal and improved fish ladders.
- Provide local and technical assistance to assess watershed conditions and develop plans to address watershed problems.
- Manage the Environmental Water Account to acquire water from willing sellers to protect fish species without reducing water supply reliability.
- Conduct an annual science review to assess effectiveness.
- Develop opportunities for working farms and ranches to contribute to ecosystem restoration objectives.

## Levee System Integrity

- Maintain and strengthen Delta levees, provide protection and enhancement of Delta habitats and drinking water quality.
- Develop best management practices for beneficial reuse of dredged material.
- Improve the Delta Emergency Management Plan and develop a Risk Management Strategy to identify risks to Delta levees, evaluate consequences and recommend actions.

## Science

- Establish the Independent Science Board to integrate world class science into Program implementation.
- Implement comprehensive monitoring and research programs. Develop performance measures to evaluate program accomplishments.

## Oversight and Coordination

- Develop and implement a program tracking system to ensure accountability and assess Program progress.
- Submit an annual report to the Legislature and Congress to assure balanced progress in meeting Program goals.
- Establish a public advisory committee and ensure public involvement in Program implementation.
- Address environmental justice and tribal needs associated with Program implementation.

## 2005 Authority Membership

### State Members

**Michael Chrisman**
*Resources Agency*

**Alan Lloyd**
*Environmental Protection Agency*

**A.G. Kawamura**
*Department of Food and Agriculture*

**Lester Snow**
*Department of Water Resources*

**Ryan Broddrick**
*Department of Fish and Game*

**Sandra Shewry**
*Department of Health Services*

### Federal Members (non-voting)

**Gale Norton**
*Department of the Interior*

**Wayne Nastri**
*Environmental Protection Agency*

**Colonel Ronald Light**
*Army Corps of Engineers*

**Rodney McInnis**
*National Marine Fisheries Service*

**Steve Thompson**
*Fish and Wildlife Service*

**Kirk Rodgers**
*Bureau of Reclamation*

### Public Members

**Alfred Montna**
*Sacramento Valley*

**Susan Kennedy**
*San Francisco Bay*

**Patrick Johnston**
*Sacramento-San Joaquin River Delta*

**Vacant**
*San Joaquin Valley*

**Paula Daniels**
*Southern California*

**Marc Holmes**
*Senate Appointee*

**Daniel Wheeler**
*Assembly Appointee*

### Public Advisory Committee Member

**Gary Hunt, Chair**
*Bay-Delta Public Advisory Committee*

### Ex-Officio Members

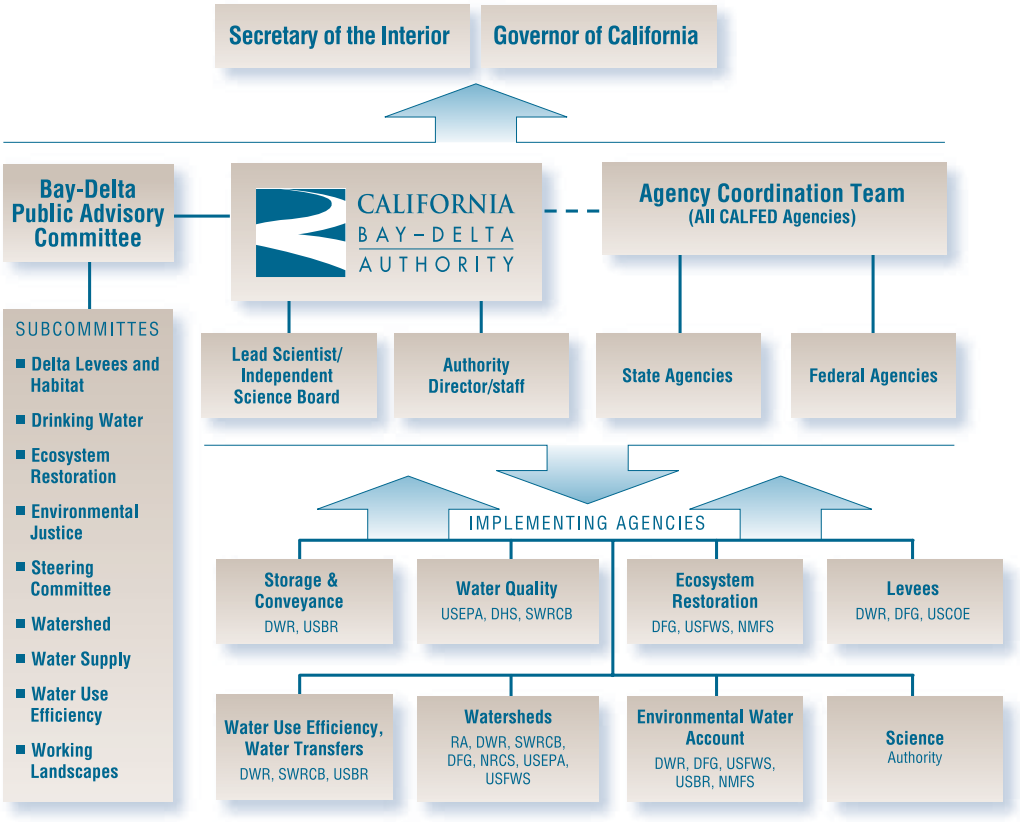
**Senator Sheila Kuehl**
*Chair, Senate Natural Resources and Water Committee*

**Senator Bob Margett**
*Vice-chair, Senate Natural Resources and Water Committee*

**Assembly Member Lois Wolk**
*Chair, Assembly Water, Parks and Wildlife Committee*

**Assembly Member Michael Villines**
*Vice-chair, Assembly Water, Parks and Wildlife Committee*

## Program Structure




## The California Bay-Delta Authority

The California Bay-Delta Authority oversees implementation of the CALFED Bay-Delta Program with 24 other state and federal agencies working to improve the quality and reliability of California's water supplies while restoring the Bay-Delta ecosystem.

The California Bay-Delta Authority Act of 2003 established the Authority as the governance structure and charged it with providing accountability, ensuring balanced implementation, tracking and assessing Program progress, using sound science, assuring public involvement and outreach, and coordinating and integrating related programs.

# WATER SUPPLY RELIABILITY

Because no single strategy will resolve California's water supply problems, CALFED agencies are implementing a diverse portfolio of projects and approaches.

Through partnerships with local and regional agencies, the CALFED agencies aim to increase water supplies, ensure efficient use of water resources and add flexibility to California's water system.

## Summary of Accomplishments

- Significant headway has been made on efforts to expand groundwater and surface water storage. More than $240 million in grants and loans has been awarded statewide for more than 160 local groundwater storage and conjunctive use studies and projects. The local cost share on these projects is approximately $900 million. Partnerships with local and regional agencies are ongoing in 18 areas of the state to improve groundwater management and develop conjunctive use projects and programs. Major progress has been made to investigate five potential surface water storage projects.
- Key advances have been achieved on conveyance efforts such as the South Delta Improvements Program (SDIP), an intertie between the Delta Mendota Canal and California Aqueduct, and other actions that will improve water quality for users in and near the Delta.
- CALFED agencies have helped stretch existing water supplies by facilitating water transfers totaling more than 700,000 acre-feet in 2004. The transactions moved water from willing sellers to areas of need while protecting other water users, local economies and the environment.
- Investments in water conservation and recycling projects have already generated significant water savings and will continue to pay off by reducing water demands, improving water quality and freeing up water to meet habitat and ecosystem needs.
- Through the Environmental Water Account (EWA), CALFED agencies have protected fish and reduced conflicts at Delta pumping facilities. In the past four years, the EWA has made more than 1 million acre-feet of water available to better protect the Delta without reducing deliveries to cities and farms while at the same time benefitting species listed in the Conservation Agreement.



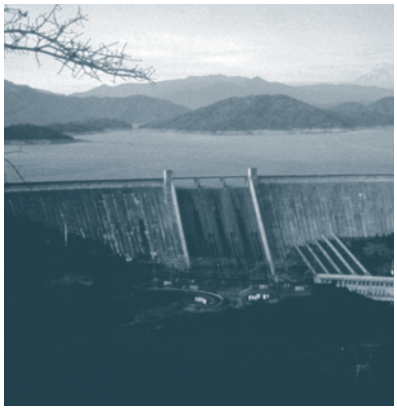
## CALFED Plan

Record of Decision (ROD)

The CALFED Plan includes the following water supply reliability goals:

- Surface Storage: Expand surface storage capacity at existing reservoirs and strategically located off-stream sites by up to 3.5 million acre-feet: North-of-the-Delta off-stream storage, Shasta Lake enlargement, Los Vaqueros Reservoir expansion, In-Delta storage and additional storage in the Upper San Joaquin (Friant), or a functional equivalent.
- Groundwater: Develop locally managed and controlled groundwater storage and conjunctive use projects in the Sacramento and San Joaquin valleys with a total of 500,000 to 1 million acre-feet of additional storage capacity.
- Conveyance: Increase permitted pumping at State Water Project (SWP) facilities from current limit of 6,680 cubic feet per second (cfs) to 8,500 cfs and eventually to 10,300 cfs. Design and construct new fish screens at Clifton Court Forebay and Tracy pumping plant, and dredge and install permanent operable barriers to improve water levels and water quality in the South Delta.
- Water Use Efficiency: Implement an aggressive water use efficiency program to make the best use of existing water supplies, including: definition of appropriate water measurement; certification of urban best management practices (BMPs) and refinement of quantifiable objectives for agricultural water use efficiency.
- Water Transfers: Promote an effective water transfer market that protects water rights, the environment and local economies.
- Environmental Water Account: Manage an Environmental Water Account to provide benefits to fish as well as water supply reliability to farms and cities.

# WATER SUPPLY RELIABILITY



## Water Supply Reliability Accomplishments by Region

### Sacramento Valley

- $35.7 million invested in 37 local projects to improve groundwater management and expand conjunctive use in the Sacramento Valley, with a potential water supply yield of 30,000 acre-feet annually.
- Progress made on studies for potential north-of-Delta off-stream storage and Shasta Lake enlargement. The proposed projects are among the five surface storage options being studied to increase storage capacity and provide flexibility to the state's water system.
- $11 million in grants awarded for agricultural and urban water use efficiency programs.
- Water transfers streamlined and transfer agreements facilitated to protect local water users, economies and ecosystems.

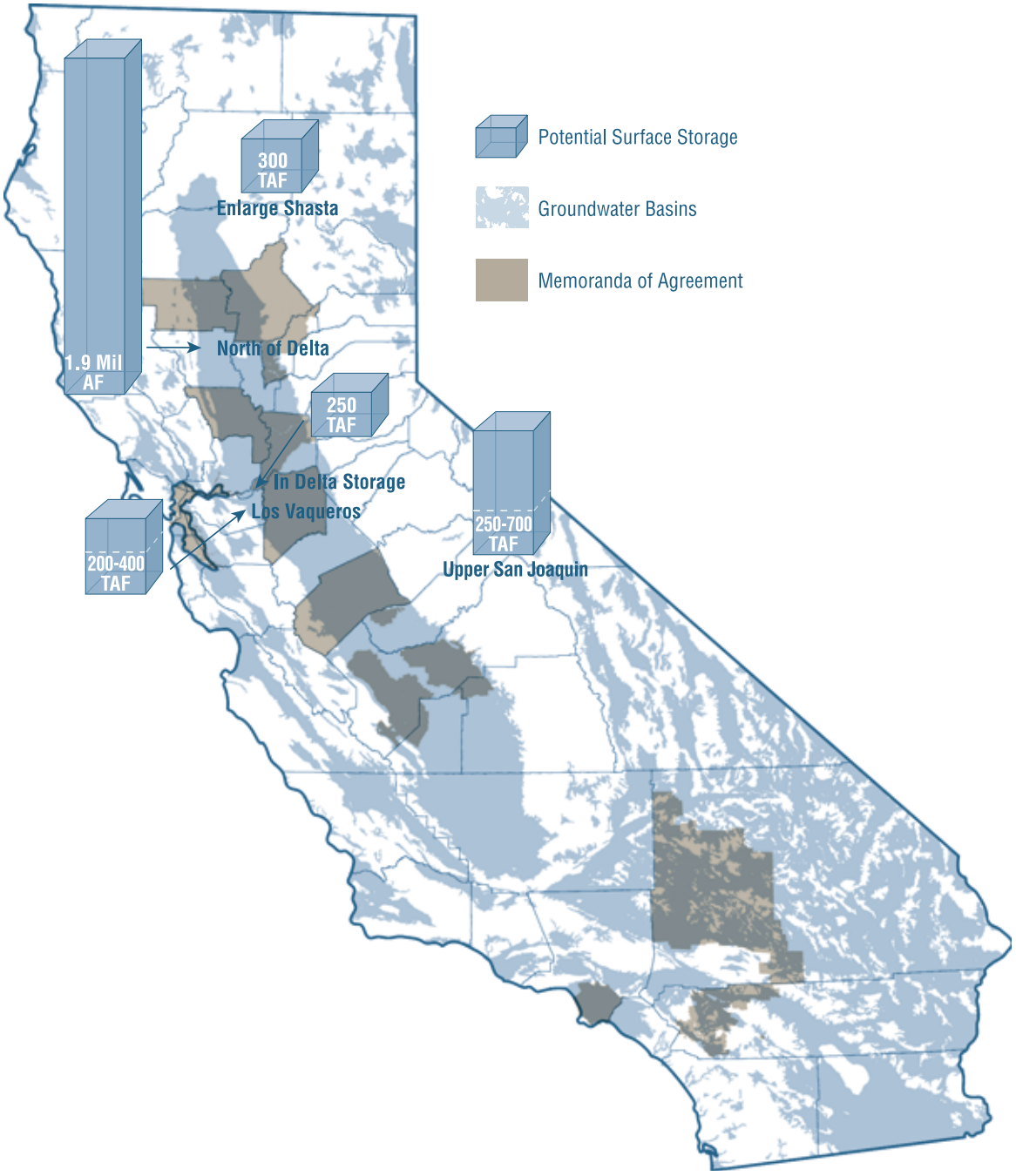
### Bay and Delta Regions

- $4.2 million invested in five local projects to improve groundwater management and expand groundwater storage.
- The Bay Area Regional Water Recycling Program was included in the federal CALFED Authority bill.
- Draft engineering feasibility study for in-Delta storage project released by the state for a 45-day public review in February, 2004. Two public workshops were held. Additional analysis will be done on issues related to water quality, stability and economics.
- Progress made on design and environmental review of South Delta Improvements Program.
- Appraisal study underway on San Luis Low Point Improvement Project to address water quality and conveyance issues for South Bay water users.
- Modeling studies completed for the Delta-Mendota Canal and the California Aqueduct Intertie. The draft Environmental Assessment/Initial Study was circulated for public review in November with a public comment period in December 2004.
- Additional studies on new juvenile salmon tracking technologies completed near Georgiana Slough. Information is being used to prepare a larger fish tracking and hydraulic study in the North Delta in 2005 to investigate potential fisheries and flow-related impacts associated with Delta Cross Channel gate operations.



## Groundwater and Potential Surface Water Storage

- *Continued studies on 5 potential surface storage projects.*
- *Signed agreements for 17 groundwater partnerships and Memoranda of Agreement.*
- *Invested more than $240 million in 163 groundwater projects with a potential yield of 300,000 acre-feet per year.*



# WATER SUPPLY RELIABILITY

## Cross-regional benefits

While the CALFED Program's regional approach emphasizes local involvement and strives to address local issues and needs, many actions in specific regions directly benefit other regions and the state as a whole. These include:

- Implementing new groundwater and surface water storage projects improves water quality and flexibility for water supply reliability throughout the state for agricultural and urban uses as well as in-stream flows that provide water quality and ecosystem benefits.
- Improving water conveyance in the South Delta increases water supplies for agricultural and urban uses and improves operational flexibility of the CVP & SWP; ensures water quality and quantity for South Delta agricultural diverters; and increases the survival of outmigrating adult salmon from the San Joaquin River.
- Investing in water recycling and water use efficiency programs reduces water demands in all regions and relieves pressure on the Delta and the water delivery system.
- Acquiring, storing and releasing water through the Environmental Water Account provides water for fish protection and keeps water supplies flowing to cities and farms in the Bay-Delta and beyond.
- Streamlining the approval process of water transfers helps stretch supplies and reduces regional demands on the Delta.
- Contra Costa County voters in March 2004 approved a ballot measure to move forward with studying Los Vaqueros reservoir expansion.
- $15.7 million invested in 35 local agricultural and urban water conservation programs.
- $43 million in grants awarded to increase water recycling by 3,500 acre-feet a year.
- Site-specific diversion improvements made to assure water supply to south Delta farms.

### San Joaquin Valley

- $77 million invested in 55 local projects to improve groundwater management and expand groundwater storage in the San Joaquin Valley, with a potential water supply yield of 64,000 acre-feet annually.
- $8.6 million invested in agricultural water conservation programs that will save 8,524 acre-feet of water per year. Another $3.1 million invested in local urban conservation programs.
- Milestones adopted for agricultural conservation to help evaluate regional progress and identify barriers to implementation.
- Progress made on developing an on-farm water efficiency incentive program with significant public input.
- Water supply reliability improved and conflicts over Delta exports reduced through Environmental Water Account actions.
- 70 percent water supply delivery target met for CVP contractors.
- Progress made on Upper San Joaquin River Basin Storage Investigation.

### Southern California

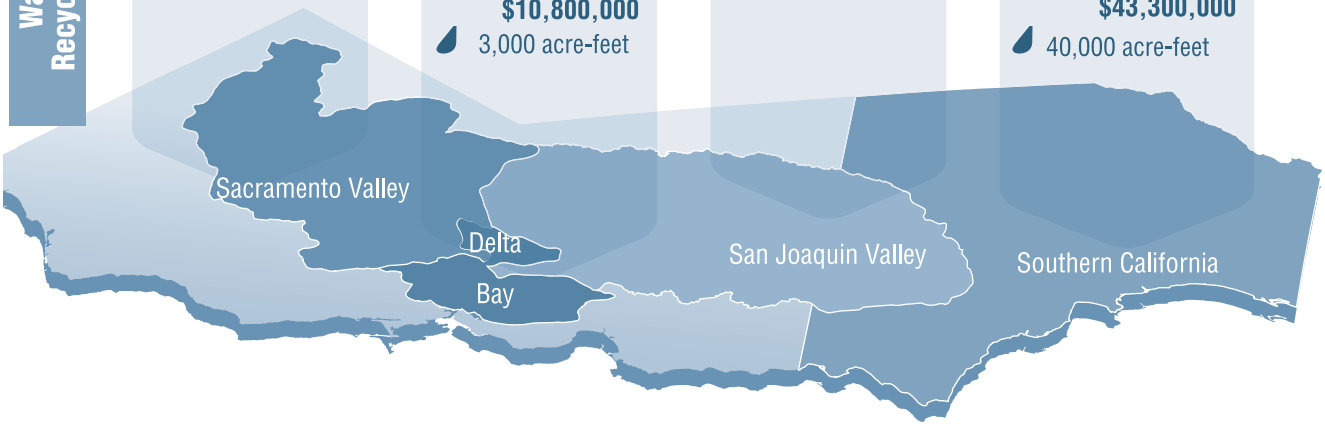
- More than $88.7 million invested in 44 local projects to improve groundwater management and expand groundwater storage in Southern California basins, with a potential water supply yield of more than 115,000 acre-feet annually.
- $28.5 million invested in urban water conservation programs that will save more than 9,000 acre-feet of water a year.
- $440 million in local, state and federal funds invested in water recycling programs that will recycle more than 408,000 acre-feet of water a year.
- Water supply reliability improved through the Environmental Water Account.
- Local water supplies augmented through water transfers facilitated by CALFED agencies.



## Water Use Efficiency Accomplishments

*Through the Water Use Efficiency Program, CALFED agencies are making targeted investments in cost-effective, local water conservation and recycling programs throughout the state. Funding grants and loans in such areas as agricultural water conservation, urban water conservation and water recycling helps meet the Bay-Delta Program's water supply reliability, water quality, and ecosystem restoration objectives.*

| | Sacramento Valley | Bay & Delta | San Joaquin Valley | Southern California |
|---|---|---|---|---|
| **Ag Water Conservation** | 35 Projects<br>**$168,000**<br>**$1,100,000**<br>**$2,000,000**<br>6,000 acre-feet | 7 Projects<br>**$89,100**<br>**$679,300**<br>**$10,400** | 64 Projects<br>**$178,000**<br>**$4,500,000**<br>**$4,000,000**<br>9,000 acre-feet | 7 Projects<br>**$4,900**<br>**$100,000**<br>**$163,000** |
| **Urban Water Conservation** | 51 Projects<br>**$1,100,000**<br>**$1,700,000**<br>**$5,000,000**<br>3,000 acre-feet | 28 Projects<br>**$4,700,000**<br>**$200,000**<br>**$10,500,000**<br>12,000 acre-feet | 8 Projects<br>**$346,000**<br>**$59,700**<br>**$2,800,000**<br>7,000 acre-feet | 45 Projects<br>**$14,200,000**<br>**$177,000**<br>**$14,200,000**<br>9,000 acre-feet |
| **Water Recycling** | | 3 Projects<br>**$32,400,000**<br>**$10,800,000**<br>3,000 acre-feet | | 24 Projects<br>**$335,700,000**<br>**$68,600,000**<br>**$43,300,000**<br>40,000 acre-feet |




Number of Projects Awarded / Funding: $Local $Federal $State / Reported Potential Yield

# WATER SUPPLY RELIABILITY

PROJECT HIGHLIGHT

## Environmental Water Account

***Overview:*** *The CALFED Program's Environmental Water Account (EWA) is designed to provide protection to the at-risk native fish of the Bay-Delta estuary through environmentally beneficial changes in the operations of the State Water Project (SWP) and federal Central Valley Project (CVP) at no uncompensated cost to the projects' water users. The EWA replaces the water used for fish, protecting the SWP and CVP water delivery systems by providing water at critical times to help meet environmental needs without water supply impacts on cities, farms and businesses. The EWA and the Ecosystem Restoration Program together form the cornerstone of CALFED's efforts to meet its environmental commitments.*

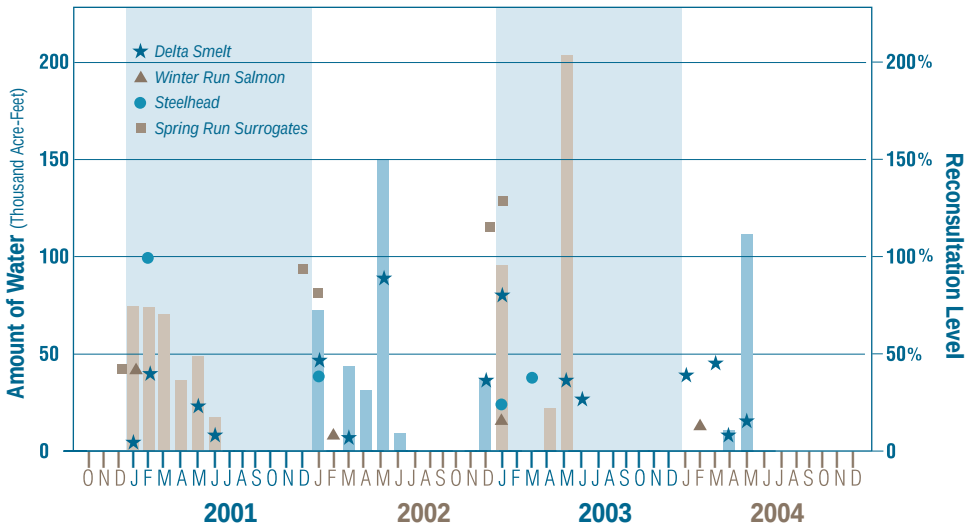
***Objectives:*** *The EWA was created to address two problems - declining fish populations and water supply impacts from Delta pumping reductions to protect fish. Its goal is to better protect at-risk native fish species such as salmon, steelhead and delta smelt by making it possible to modify water project operations in the Bay-Delta without disrupting water deliveries. The EWA agencies buy water from willing sellers or divert surplus water when it is safe for fish. The water is then banked, stored, transferred or released as needed to protect fish and compensate water users with a replacement water supply when EWA fish actions affect exports.*

***EWA in Action:*** *In late spring 2004, when concern for delta smelt was high and real-time monitoring indicated that young delta smelt were in the vicinity of Delta export pumps, water managers reduced pumping to improve survival and allow fish to move out of the interior Delta. EWA water was used to offset export reductions that would otherwise have reduced project supplies. The experience is a sharp contrast to the conflicts in the 1990s, when periodic concerns about the loss of federally-listed fish at the Delta pumps led to pumping curtailments that reduced water deliveries by the projects to their contractors.*

***EWA Progress:*** *The EWA was launched in 2000 as a four-year experiment. After review of the efficacy of the EWA and completion of environmental analyses, the five EWA agencies agreed in September 2004 to extend the EWA for three more years through the end of 2007. The state and federal fish and wildlife agencies also agreed to extend the annual provision of regulatory commitments to the projects under state and federal law provided the necessary EWA assets are obtained by DWR and Reclamation and the ERP is funded at a level sufficient to provide adequate protection and recovery of covered species.*

*In November 2004, the EWA Technical Review Panel convened a two-day workshop to review the first four years of EWA operation and discuss continuation of a long-term EWA.*

### EWA Expenditures





PROJECT HIGHLIGHT

## Delta Improvements Package

*In August 2004, the California Bay-Delta Authority adopted the Delta Improvements Package, linking a number of key actions outlined in the Record of Decision. This package of actions identified water quality and water conveyance modifications in the Delta that will improve water supply reliability for in-Delta and export users, support continuous improvement in drinking water quality, and protect and restore the Delta ecosystem.*

*The package recognized that key decisions on Delta components cannot be made in isolation. Specific actions include: South Delta Improvement Program (SDIP), Delta Mendota Canal and California Aqueduct Intertie, In-Delta and San Joaquin River water quality improvements, EWA extension, and improvements in CVP and SWP integrated operations. The package also includes a commitment to continue to integrate science into the planning and implementation of Delta Improvements Package actions. As an example, to understand how water project operations impact fish and water quality, investments are being made in cooperative hydrodynamic and fisheries investigations to assist managers in understanding their actions.*

*A number of key actions in the package are underway. Accomplishments in 2004 include:*

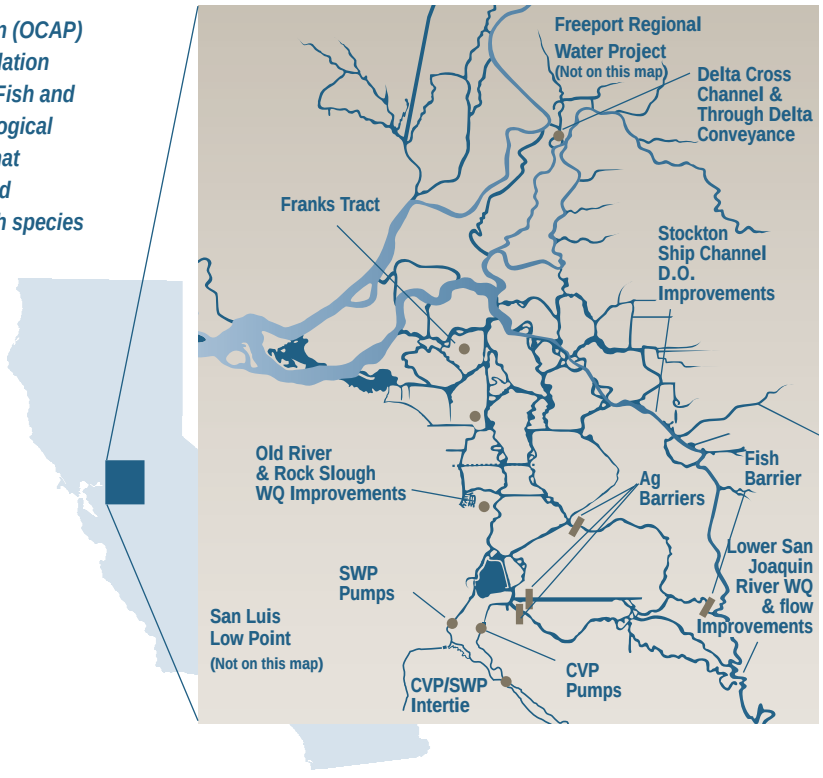
***OCAP:** The CVP and SWP Operations Criteria and Plan (OCAP) Biological Assessment was finalized and lays a foundation for current and future CVP and SWP operations. The Fish and Wildlife Service and NOAA Fisheries also issued Biological Opinions. The Resource agencies have determined that continued operations will not jeopardize the continued existence of currently threatened and endangered fish species (Winter and Spring run Chinook salmon, Coho salmon, delta smelt, and Central Valley steelhead).*

***South Delta Improvements Program (SDIP):** The temporary barriers program marked progress with preparation of environmental documentation on permanent agricultural and fish barriers associated with the increased permitted pumping capacity at the State Water Project Delta pumping plant. Early consultation with the federal fisheries agencies on the SDIP was included as part of the OCAP Biological Opinions.*

***Recirculation Study:** A pilot recirculation study was conducted in August 2004, following release of a final hydrologic modeling appraisal study to the State Water Resources Control Board on two preliminary alternatives to recirculate water from the Delta-Mendota Canal through the Newman Wasteway to the lower San Joaquin River for water quality and flow improvement. Preliminary results suggest that recirculation may be effective in augmenting flows and improving water quality on the San Joaquin River.*

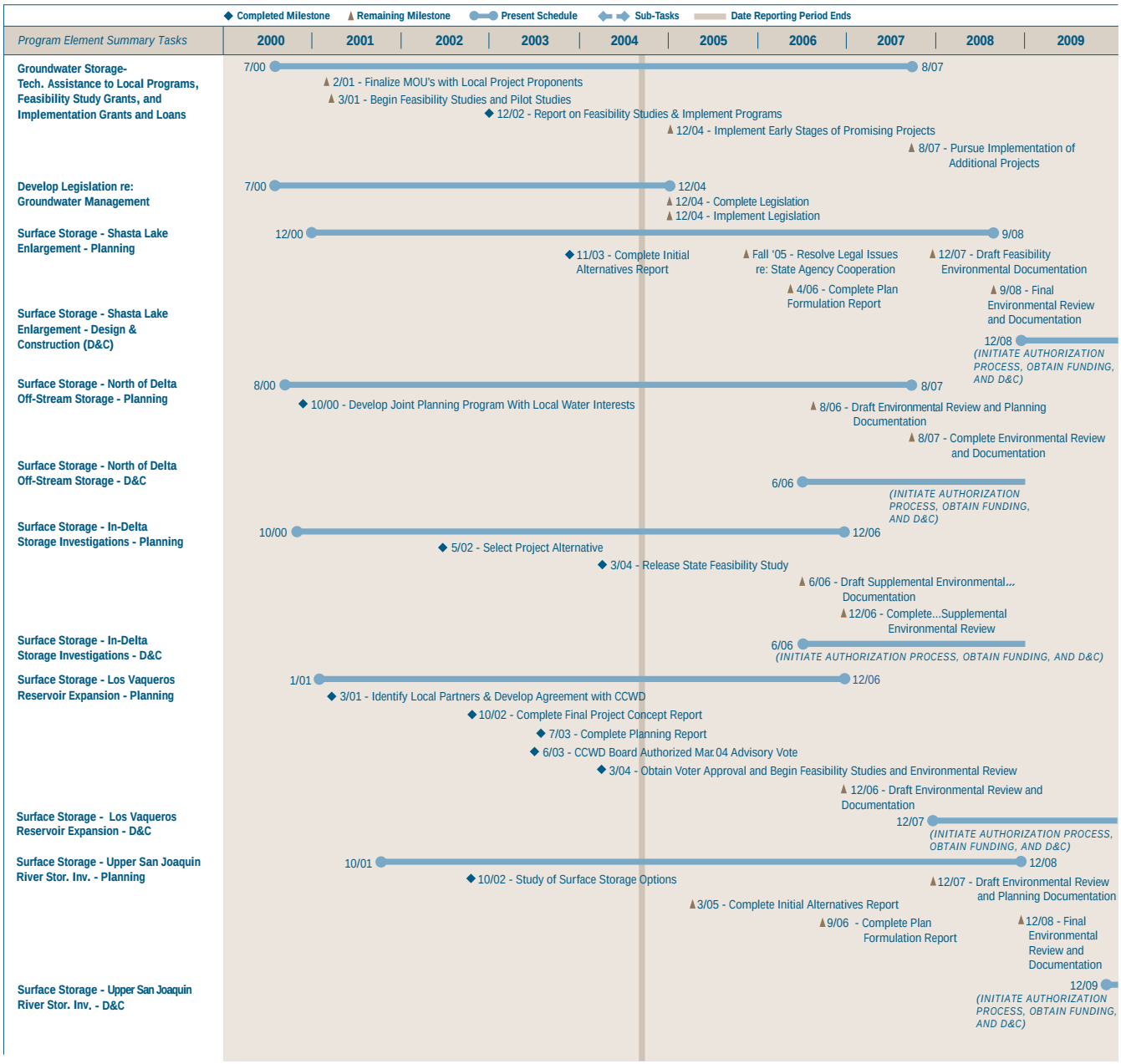
***Stockton Dissolved Oxygen:** Studies are underway to evaluate specific sources of oxygen-depleting substances to assist in the development of detailed load allocations. Other actions include feasibility and demonstration studies of both aeration and non-aeration measures with an aeration demonstration project beginning in 2005 for a two-year period.*

***Environmental Water Account:** The Environmental Water Account was extended through 2007 based on its implementation during the first four years and implementation of Delta Improvements Package actions.*



# WATER SUPPLY RELIABILITY

## STORAGE





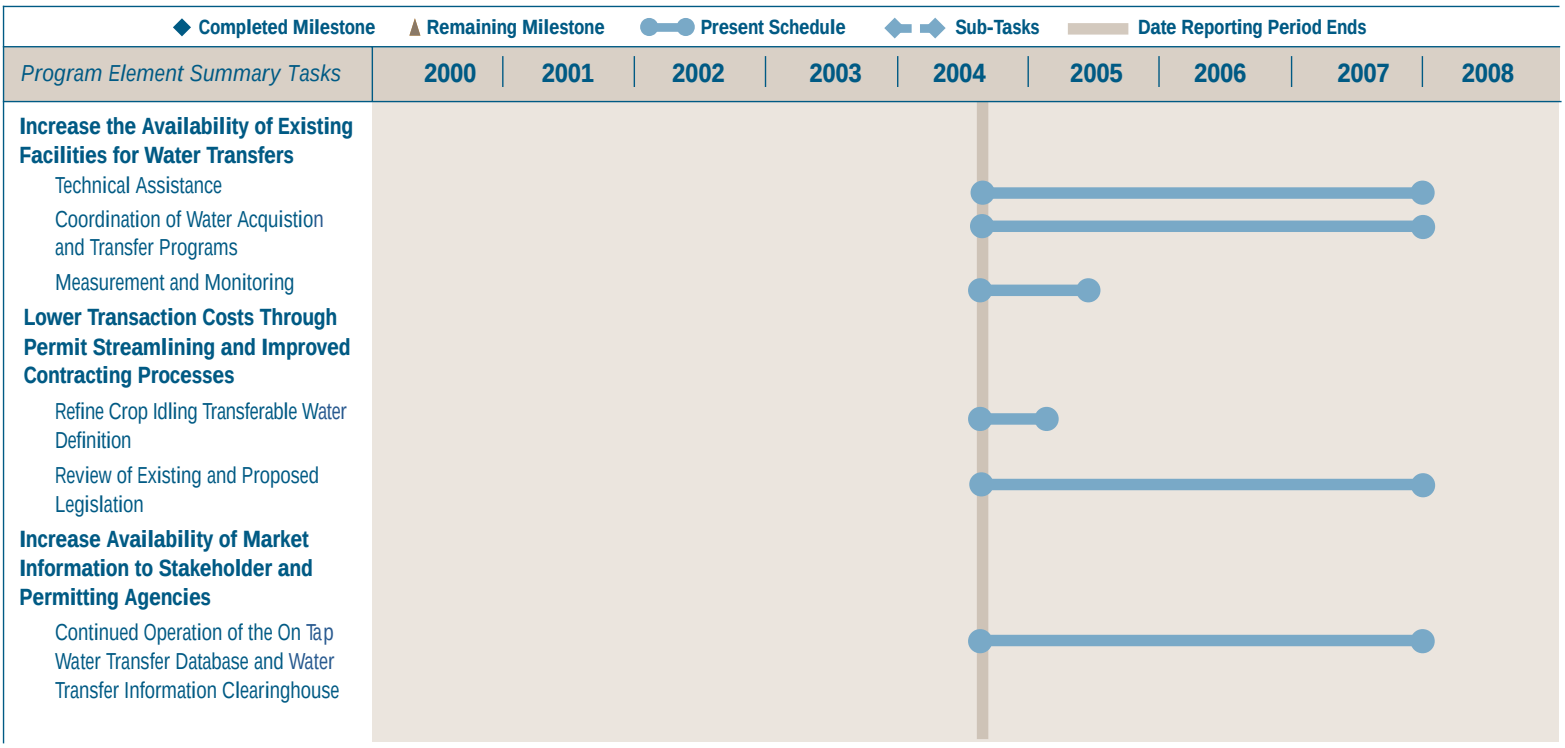
## CONVEYANCE

◆ Completed Milestone ▲ Remaining Milestone ●—● Present Schedule ◆—▶ Sub-Tasks ▭ Date Reporting Period Ends

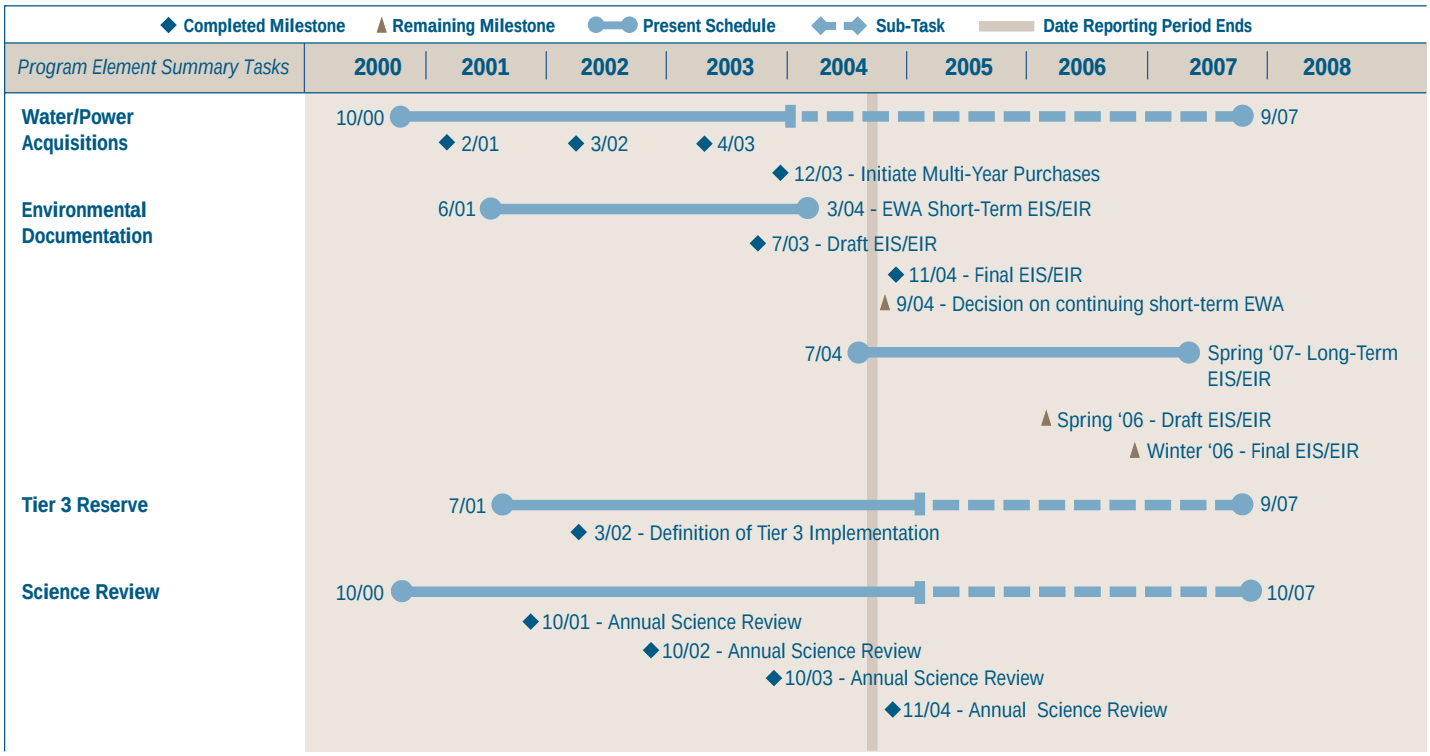
| Program Element Summary Tasks | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Interim South Delta Actions/ Operate Temporary Barriers** | 8/00 (ENVIRONMENTAL DOCS & CONSTRUCTION OCCUR ANNUALLY UNTIL PERMANENT BARRIERS ARE OPERATIONAL) | | | | | | | | 12/08 | |
| **8,500 cfs - Permanent Operable Barriers (DIP)** | | | 3/02 | | | | | | 1/09 | |
| | | | | ◆ 12/02 ROD - Complete EIR/EIS | | ▲ 10/05 - Complete Final EIR/EIS | | | | |
| | | | | | | ▲ 1/06 - Secure Regulatory Permits (change pending) | | | | |
| | | | | | | ▲ 1/06 - Begin dredging/diversion improvements | | | | |
| | | | | | | Complete Barrier Construction and Dredging Diversion Improvements - 8/08 ▲ | | | | |
| | | | | | | | | | Begin 8500cfs Operations - 9/08 ▲ | |
| **Clifton Court Fish Screens/ 10,300 cfs** | | 1/01 (THIS SCOPE AND SCHEDULE OF THIS PROJECT IS CURRENTLY UNDER RE-EVALUATION) | | | | | 7/06 | | | |
| **Tracy Fish Test Facility** | 8/00 (THIS SCOPE AND SCHEDULE OF THIS PROJECT IS CURRENTLY UNDER RE-EVALUATION) | | | | | | 11/05 | | | |
| **Lower San Joaquin Flood Improvements** | | | 2/02 | | | | | | | 1/13 |
| | | | | | ◆ 11/03 - Complete draft Concept Project White Paper | | | | | |
| | | | | | | | ▲ 5/06 - Secure USCOE PMP and Funding/staffing authorization | | | |
| | | | | | | | | | Prepare River Management Plan - 12/08 ▲ | |
| **Delta Cross Channel Re-operation (DIP)** | 8/00 | | | | | | 11/05 | | | |
| | | ◆ 10/00 - Begin Operational Studies | | | | | ▲ 11/05 - Complete Studies & Make Recommendations | | | |
| | | | | | | | ▲ 1/06 - Implement Recommendations | | | |
| **Through Delta Facility - Planning (DIP)** | 8/00 | | | | | | | 12/07 | | |
| | ◆ 10/00 - Develop Study Plan | | | | | | ▲ 11/05 - Complete Studies & Make Recommendations | | | |
| | ◆ 10/00 - Fund & Begin Studies | | | | | | ▲ 1/06 - Seek Funding and Initiate EIR/EIS | | | |
| | | | | | | | | ▲ 12/07 - Complete Final EIR/EIS | | |
| **North Delta Flood Control and Ecosystem Restoration Improvements Program** | 9/00 | | | | | | | | | 6/08 |
| | | | | | | ▲ 4/05 - Complete Draft EIR/EIS | | | | |
| | | | | ◆ Early 03 ROD - Complete Envir. Studies | | ▲ 7/05 - Complete Final EIR/EIS | | | | |
| | | | | | ◆ Early 04 ROD - Complete Funding and Design | ▲ 9/05 - Complete Project Design & Funding Plan | | | | |
| | | | | | | ▲ Mid 05 - Decide on Funding and Construction | | | | |
| | | | | | | | | | Complete Construction - 11/08 ▲ | |
| **Delta Mendota Canal/California Aqueduct Intertie (DIP)** | | | 1/02 | | 10/04 | | | | | |
| | | | | | ◆ 11/04 - Complete Draft Environmental Assessment/Initial Study | | | | | |
| | | | | | ▲ 2/05 - Complete Final EA/Initial Study | | | | | |
| | | | | | | ▲ 10/05 - Begin Construction | | | | |
| | | | | | | | ▲ 12/06 Complete Construction and Begin Operation | | | |
| **Clifton Court Forebay/ Tracy P. P. Intertie** | | | | | | 1/05 | | | | 6/10 |
| **San Luis Reservoir Low Point Improvement Project - Planning** | | 5/01 | | | | | 6/06+ | | | |
| | | ◆ 5/01 - Fund Studies of Bypass Canal, etc. & Allocate Funds | | | | | | | | |
| | | | | | | ▲ 11/04 - Complete Draft EIR/EIS | | | | |
| | | | | | | ▲ 5/05 - Complete Final EIR/EIS | | | | |
| | | | | | | | ▲ 6/06 - Begin Authorization & Funding | | | |
| | | | | | | | ▲ 6/06 - Begin Final Design & Land Acquisition | | | |
| **San Luis Reservoir Low Point Improvement Project - Design & Construction** | | | | | | Pending | | | | |
| **Franks Tract (DIP)** | | | | 12/02 | | | | | | |
| | | | | | | | ▲ 2/06 - Complete Draft EIR/EIS | | | |
| | | | | | | | ▲ 7/06 - Complete Final EIR/EIS | | | |
| | | | | | | | ▲ 11/06 - Begin Phased Construction | | | |

# WATER SUPPLY RELIABILITY

## WATER TRANSFER PROGRAM




## ENVIRONMENTAL WATER ACCOUNT





## WATER USE EFFICIENCY

◆ Completed Milestone ▲ Remaining Milestone ●—● Present Schedule ◆—◆ Sub-Tasks Date Reporting Period Ends

| Program Element Summary Tasks | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|
| **Science, Monitoring and Evaluation** | 8/00 ● | | | | | | | | ● 8/07 |
| | | | | | | ▲ 12/04 - Develop Performance Indicators | | | |
| | | | | | | ▲ 12/04 - Comprehensive WUE Evaluation | | | |
| **Water Measurement** | 1/01 ● | | | | ● 12/03 | | | | |
| | | | | | ◆ 9/03 - Definition of Appropriate Measurement | | | | |
| | | | | | ◆ 9/03 - Draft Agricultural/Urban Water Measurement Definition | | | | |
| | | | | | | ▲ 12/04 - Draft Water Measurement Legislation | | | |
| **Quantifiable Objectives** | 8/00 ● | | | | | | | | ● 9/07 |
| | | | ▲ 6/02 - Refine Quantifiable Objectives | | | | | | |
| | | | | | | ▲ 7/04 - Draft Quantifiable Objectives Report | | | |
| **Urban Certifications** | | 11/01 ● | | | ● 12/02 | | | | |
| | | | | | ▲ 12/02 - Implement Urban Certification Process | | | | |
| **Agricultural and Urban Grants and Loans** | 8/00 ● | | | | | | | | ● 9/07 |
| | ◆ 8/00 - Establish Loan & Grant Program | | | | | | | | |
| | | | | ◆ 11/02 - Establish Grant Criteria | | | | | |
| | | | | | ◆ 5/03 - Select Grants | | | | |
| **Agricultural and Urban Technical Assistance** | 8/00 ● | | | | | | | | ● 9/07 |
| | | | | | ▲ 5/03 - Determine Technical Assistance Needs | | | | |
| | | | | | ▲ 7/03 - Draft Technical Assistance Plan | | | | |
| **Water Recycling Loans & Grants, Including Research Grants** | 8/00 ● | | | | | | | | ● 9/07 |
| | ◆ 8/00 - Establish Loan & Grant Program | | | | | | | | |
| **Water Recycling Technical Assistance** | 8/00 ● | | | | | | | | ● 9/07 |
| **Wetlands Grants and Technical Assistance** | 8/00 ● | | | | | | | | ● 9/07 |
| | ▲ 8/00 - Establish Loan & Grant Program | | | | | | | | |
| **Oversight & Coordination** | 8/00 ● | | | | | | | | ● 9/07 |
| | ◆ 12/00 - Prepare Program Implementation Plan | | | | | | | | |
| | ◆ 8/00 - Establish Agricultural Milestones | | | | | | | | |
| | ◆ 12/00 - Establish Advisory Committee | | | | | | | | |
| | | | ▲ 7/01 - Develop Stage 1 Finance Proposal | | | ▲ 12/04 - Determine Funding Needs & Update Finance Plan | | | |

# WATER QUALITY

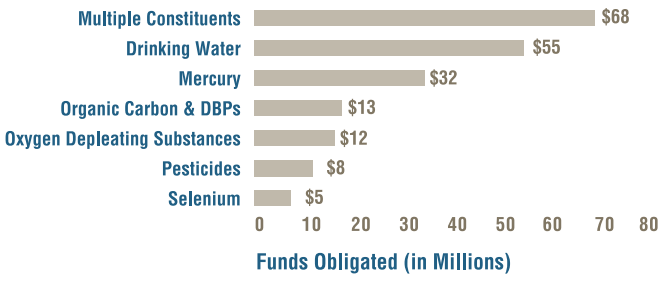
CALFED agencies and the Water Quality, Ecosystem Restoration and Watershed Management programs are investing in water quality projects to improve water quality for all beneficial uses, including drinking water, agricultural water, providing clean water for a diverse and healthy aquatic ecosystem, and supporting watershed stewardship. The Water Quality Program is investing in projects to improve water quality from source to tap to benefit the more than 22 million Californians whose drinking water supplies come from the Bay-Delta watershed. The Ecosystem Restoration Program is investing in research, monitoring and source control projects to reduce impacts to aquatic organisms from toxic chemicals and oxygen depletion, as well as ways to address chemicals that bioaccumulate in the food chain and may affect people and wildlife who consume fish. The Watershed Management Program improves water quality by providing financial and technical support for local groups to perform watershed activities that improve water quality and watershed stewardship.

## Summary of Accomplishments

CALFED programs have invested more than $195 million in 227 projects to improve water quality for drinking water, ecosystems and to promote watershed management.

- More than $76 million invested in 60 projects to improve drinking water quality, including source improvement, regional water investigations and exchanges, conveyance improvements, treatment demonstrations and research across the state.
- More than $67 million invested in 55 projects to identify and reduce contaminants affecting aquatic life, and to develop and implement a strategy for reducing exposure to legacy pollutants such as mercury that can bioaccumulate and affect aquatic life, wildlife and humans who consume fish. CALFED agencies are working to improve the levels of dissolved oxygen in the Stockton Deep Water Ship Channel that currently impede the passage of salmon.
- More than $52 million invested in 112 projects that help provide overall improvement of water quality by promoting capacity building, planning and implementation of watershed stewardship throughout the Bay-Delta and its tributaries.

## Breakdown of Expenditures by Constituent



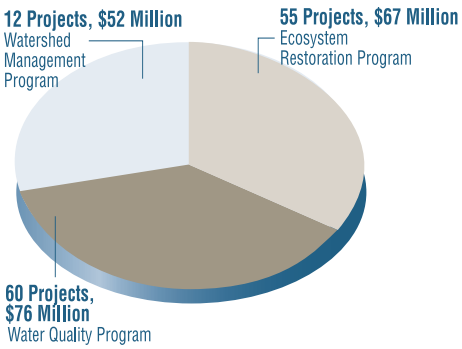

## CALFED Plan

Record of Decision (ROD)

The CALFED Plan includes the following water quality goals:

- Enable users to capture higher quality Delta water for drinking water purposes.
- Reduce contaminants and salinity that impair Delta drinking water quality.
- Evaluate alternative approaches to drinking water treatment to address growing concerns over disinfection byproducts and salinity.
- Enable voluntary exchanges or purchases of high quality source waters for drinking water uses.
- Improve and/or maintain water and sediment quality conditions that fully support healthy and diverse aquatic ecosystems in the Bay-Delta estuary and watershed; and eliminate, to the extent possible, toxic impacts to aquatic organisms, wildlife, and human health.
- Improve dissolved oxygen conditions in the San Joaquin River near Stockton as part of ecosystem restoration efforts.

## Funds Obligated for Projects that Support Water Quality by Program





## Water Quality Accomplishments by Region

### Multi-Region

- More than $26 million invested in 12 projects that affect more than one region, including four treatment demonstration projects, four research projects, the San Joaquin – Southern California Water Exchange project, and a broad public outreach project.
- More than $1 million invested in support of the development of a Central Valley Drinking Water Policy that is managed by a broad stakeholder work group.
- Contaminants workshop held to provide a forum for discussion on the current state of knowledge on contaminants and to develop recommendations for future priorities.
- The Mercury Strategy was finalized and adopted by the Authority. More than $30 million has been approved for projects to implement the strategy, including research on sources and cycling of mercury, evaluating ecological effects, water and tissue monitoring and public outreach and education.
- $6 million invested in seven projects to investigate sources of toxicity to aquatic life and to promote approaches that reduce toxic compounds entering the waterways. These efforts include public education to reduce urban pesticide usage and development and outreach of best management practices to reduce water quality impacts from agricultural pesticide use.
- More than $12 million invested in multi-regional dissolved oxygen projects to support studies to identify sources, causes and study solutions for control.

### Sacramento Valley

- More than $10 million invested in 12 projects, including $595,000 to protect drinking water quality and watershed health on Steelhead Creek in Sacramento County, $250,000 to develop a Sacramento Regional Water Quality Management Plan, and other projects to develop and implement best management practices.
- $1.2 million provided to investigate sources of mercury in the Sacramento River watershed, including an inventory of abandoned mine sites.
- $4 million invested by the three programs to develop and evaluate practices to reduce organophosphate pesticide runoff and provide education to agricultural and urban users to improve water quality.
- 55 projects for $27 million funded for local groups to do watershed assessments and develop watershed plans, monitoring, and implement watershed restoration activities in the Sacramento River watershed.

### Bay and Delta Regions

- More than $19 million invested in 21 projects including implementation of best management practices in the Delta and along the North Bay and South Bay Aqueducts, the development of a Delta regional drinking water quality management plan, and support for the development and construction of continuous monitoring stations at key Delta locations, including:
  - The Rock Slough and Old River Water Quality Improvement Projects that will complete construction in 2005.
  - Bay Area Water Quality/Water Supply Reliability Project that will be completed in 2005 with regional planning transitioning to a local stakeholder group.

# WATER QUALITY

- Program established to monitor dissolved oxygen and other parameters in the Bay-Delta and San Joaquin River.
- $25 million invested in nine projects to evaluate how restoration actions may impact Delta water quality, including mercury and organic carbon.
- $4 million invested in research projects to determine sources and cycling of selenium in the estuary and evaluate impacts to aquatic life.
- $7 million invested in research projects to evaluate the effects of contaminants on key species of concern, including anadromous salmonids, delta smelt, Sacramento splittail and sturgeon.
- 34 projects supported with more than $16 million so that community organizations can do watershed assessments, citizen monitoring and carry out restoration activities on watersheds in the Bay and Delta regions.

## San Joaquin Valley

- More than $33 million invested in 20 projects, including implementation of best management practices and other types of projects that contribute to reducing salinity in the San Joaquin River.
- A basin plan amendment for the control of salinity and boron in the lower San Joaquin River was completed by Central Valley Regional Water Quality Control Board, and a group of stakeholders have formed the San Joaquin River Water Quality Management Group to implement projects to meet the objectives.
- 23 projects funded for more than $9 million in the San Joaquin region for local groups to improve water quality and enhance watershed stewardship.
- $11 million provided to eight projects to address water quality issues in the San Joaquin region, including $2.7 million to address selenium and salinity from the Grasslands district and develop a real-time monitoring system and a pilot-scale treatment project.

## Southern California

- More than $8 million invested in six projects, including the development of a Southern California regional drinking water quality management plan:
  - Water quality improvements in terminal Southern California reservoirs and in groundwater replenishment projects.
  - Desalination Research and Innovation Partnership (DRIP). The project already has resulted in development of advance reverse osmosis membranes.
- $3.7 million provided in funds for eight projects in Southern California to develop watershed management plans, perform monitoring and provide outreach and education.

*Rock Slough Headworks for the Contra Costa Canal*

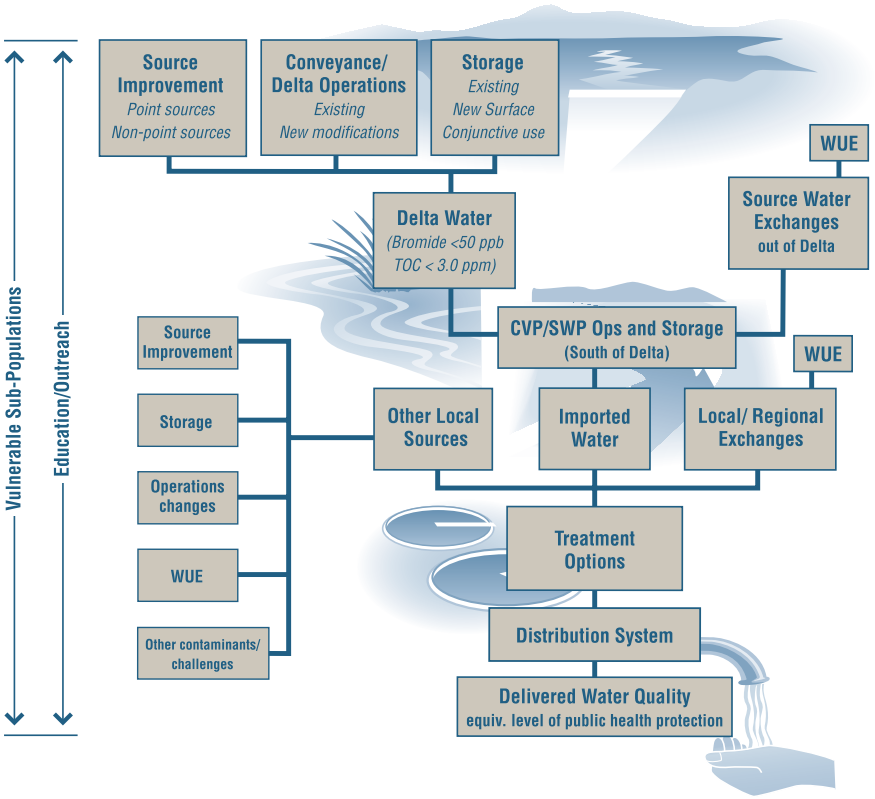


## Cross-regional Benefits

The CALFED Program's regional approach emphasizes local involvement and strives to address local issues and needs. At the same time, many actions in specific regions directly benefit other regions and the state as a whole. These include:

- Supporting healthy ecosystems and anadromous fish populations through water quality improvements in Bay-Delta watersheds that in turn improve water supply reliability for cities and farms.
- Protecting water quality at the source allows for more reliable water treatment, ultimately better protecting and benefiting water customers.
- Protecting and improving water quality in the Delta benefits cities and farms in the Bay Area, San Joaquin Valley and Southern California that rely on Delta water exports.
- Improving regional cooperation on water quality improvements and regional exchanges can help relieve pressure on the Delta during droughts and other emergencies.

## Equivalent Level of Public Health Protection (ELPH)




*This conceptual diagram shows options and opportunities to improve water quality as it moves through the system from source to tap.*

*This year the Water Quality Program focused efforts on developing a strategic plan for the program, initiating regional ELPH planning efforts, and supporting the Central Valley Drinking Water Policy technical work that will develop conceptual models for high priority drinking water constituents in 2005 and 2006.*

# WATER QUALITY

PROJECT HIGHLIGHT

## Central Valley Drinking Water Policy

*A multi-year effort is currently under way to develop a drinking water policy for surface waters in the Central Valley. Current policies and plans lack water quality objectives for several known drinking water constituents of concern, such as disinfection by-product precursors and pathogens, and do not include implementation strategies to provide effective source water protection. The development of a comprehensive drinking water policy for the Delta and its upstream tributaries is a CALFED ROD milestone.*

*The Central Valley Regional Water Quality Control Board (CVRWQCB) is the lead agency for developing the drinking water policy that will be incorporated into the Basin Plans for the Sacramento and San Joaquin basins. The Central Valley Drinking Water Policy Work Group, consisting of stakeholders who could potentially be affected by the drinking water policy and state and federal agency representatives, is working with the CVRWQCB to obtain the technical information needed to develop a drinking water policy. The Bay-Delta Public Advisory Committee Drinking Water Subcommittee provides a forum for communicating with a larger stakeholder community.*

*A technical work plan was prepared to guide the efforts. Key tasks include water quality monitoring, pollutant load evaluations, and evaluation of potential control strategies to identify those that are reasonably attainable and cost effective. The first major accomplishment of this effort occurred in July 2004 when the CVRWQCB adopted a resolution reaffirming their commitment to and support of this work. The current focus is on the development of conceptual models for high priority drinking water constituents and the development of a water quality database.*

*The technical work is scheduled for completion in 2007. Policy development and adoption as a Basin Plan Amendment could occur by the middle of 2009. The CVRWQCB Basin Plan amendment process will include additional public outreach and review, and will provide further opportunity for stakeholder input.*

PROJECT HIGHLIGHT

## Low Dissolved Oxygen in the San Joaquin River

*The Stockton Deep Water Ship Channel (DWSC) is a dredged portion of the San Joaquin River that begins at the mouth of the San Joaquin River near Antioch and ends near Stockton. The channel allows large ships access to the interior of the Central Valley from the open sea. The DWSC experiences regular periods of low dissolved oxygen (DO) concentrations and often violates water quality objectives. Low DO can significantly impact aquatic life and could be acting as a barrier to migrating fall-run Chinook salmon in the channel.*

*Since 1999, more than $12 million in grant funds have been provided for studies to identify sources and causes of the DO problem and to identify solutions for control. Findings indicate low DO in the DWSC is mainly caused by the altered river flow, the depth of the channel, and upstream inputs of algae and oxygen-depleting substances.*

### *Solving the Problem*

*CALFED agencies support a phased approach for studies and actions to correct the dissolved oxygen problem. Studies are on-going to evaluate specific sources of oxygen-depleting substances to assist in the development of detailed load allocations. Other actions include feasibility and demonstration studies of both aeration and non-aeration measures. Non-aeration options include control of oxygen-depleting substances in and upstream of the DWSC and could include pilot projects for source control of algae and/or nutrients. Agencies and stakeholders are currently evaluating water management actions in the San Joaquin River and South Delta and their potential to improve or prevent further degradation of dissolved oxygen in the channel.*

### *Aeration Demonstration Project*

*CALFED agencies have selected an experimental aeration project to demonstrate the response to the DWSC by adding oxygen to channel water. The selected pilot project uses the U-Tube system that delivers oxygen to water pumped through a device. By subjecting the oxygen bubbles to increased pressure, more oxygen can be dissolved into the water. This super-saturated oxygen rich water is then injected into the channel.*

### *Benefits*

*CALFED agencies are working together to ensure studies and management actions are based on sound science and subject to peer review and integrated with and support the regulatory process. This aeration demonstration project should improve DO conditions in the channel over a two-year period.*



## WATER QUALITY

◆ Completed Milestone ▲ Remaining Milestone ●—● Present Schedule ◆—▶ Sub-Tasks ▭ Date Reporting Period Ends

| Program Element Summary Tasks | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|
| **Source Improvement** | | | | | | | | | |
| **Central Valley Drinking Water Policy Delta and Delta Upstream Tributaries** | | | | 3/03 ●—● 12/19 | | CVRWQCB - Complete Technical Work - 6/07 ▲ to Support Basin Plan Amendment | | | |
| | | | | | | | CVRWQCB - Establish and Begin Implementation - 12/09 ▲ of Drinking Water Policy | | |
| **San Joaquin Valley Agricultural Drainage** | | | 12/01 ●—● 12/14 | | | | | | |
| | | | | ◆ 12/02 - Initiate Regional Desalinization Demo Project | | | | | |
| | | | | | ◆ 9/04 - Finalize State Basin Plan Amendment & Total Max Daily Load for Salinity in S.J. River | | | | |
| **Stockton Deep Water Ship Channel Dissolved Oxygen** | | | | | | ▲ 1/05 - Begin Implementation of San Joaquin River Water Quality Management Plan | | | |
| | | | | | | ▲ 1/05 - Phased Basin Plan Amendment and Total Max Daily Load for Dissolved Oxygen | | | |
| | | | | | | ▲ 9/05 - Begin Aeration Demonstration Project | | | |
| | | | | | | | | | Finalize State Basin Amendment and TMDL- 6/09 ▲ |
| **South Delta Water Quality Standards** | | 9/00 ●—● 8/02 | | | | | | | |
| | | | ▲ 8/02 - Develop & Implement Plan to Meet State Water Quality Standards | | | | | | |
| **North Bay Aqueduct** | | | 3/02 ●—● 12/03 | | | | | | |
| | | | | ◆ 12/02 - Implement Watershed Runoff Water Quality Best Management Practices | | | | | |
| | | | | | ◆ 12/03 - Study Feasibility of Relocating North Bay Aqueduct Intake | | | | |
| **Old River and Slough Water Quality Improvement Projects (WQIP)** | | | 1/01 ●—● 12/07 | | | | | | |
| | | | | | | ▲ 3/05 - Complete all Environmental Docs | | | |
| | | | | | | ▲ 6/05 - Complete Construction | | | |
| **Operational Improvements/ Recirculation** | | | 9/00 ●—● 12/06 | | | | | | |
| | | | | | ◆ 8/04 - Initiate Pilot Studies | | | | |
| | | | | | | ▲ 12/05 - Complete all Environmental Docs | | | |
| | | | | | | ▲ 1/06 - Implementating if Feasibillity | | | |
| **Regional Projects** | | | | | | | | | |
| **Regional ELPH Plans** | | | | | 6/04 ●—● 6/07 | | | | |
| | | | | | | Complete Regional ELPH Plans - 6/07 ▲ For Every Major Region | | | |
| **Bay Area Water Quality and Supply Reliability Project** | | | | 7/01 ●—● 9/06 | | | | | |
| | | | | ◆ 11/02 - Complete Phase I | | | | | |
| | | | | | | ▲ 12/04 - Complete Phase II and Consideration by Water Agencies | | | |
| | | | | | | ▲ 5/05 - Transition to Bay-Area IRWMP | | | |
| **San Joaquin Valley/Southern California Water Exchange** | | | | | 8/00 ●—● 3/09 | | | | |
| | | | | | ◆ 6/03 - Complete Feasibility Studies | | | | |
| | | | | | | ◆ 6/04 - Indentify Pilot Projects | | | |
| | | | | | | | ▲ 3/05 - Decision on Implementing Pilot Projects | | |
| | | | | | | | ▲ 3/06 - Begin Implementation of Long-Term Program | | |
| **Treatment Technology** | | | | 12/01 ●—● 1/14 | | | | | |
| | | | | ▲ 12/02 -Initiate UV Disinfection Plant Demo Project | | | | | |
| | | | | | | ◆ 6/05 - Science Panel Evaluation of Need for Additional Demo Projects | | | |
| **Mercury Management** | | | | | | | | | |
| **Initial Mercury Studies** | | | | | '97 ●—● '03 | | | | |
| | | | | | | '02 ●—● 6/04 | | | |
| | | | | | | Development of Mercury Strategy | | | |
| | | | | | | ◆ 6/04 - Adopted by the California Bay-Delta Authority | | | |
| | | | | | | | | | '03 ●—● |
| | | | | | | | | | Implementation of Strategy |

# LEVEE SYSTEM INTEGRITY

The goal of the Levee System Integrity Program is working to protect water supplies needed for ecosystems, cities and farms. Levee improvements reduce the threat of levee failure and seawater intrusion, and also protect major interstates, roadways, gas and water lines, power lines, railways, cities, towns, agricultural lands and habitat.

## Summary of Accomplishments

- Federal, state and local agencies have preserved and protected more than 650 miles of levees per year, boosting water supply reliability and water quality by reducing the threat of levee failure due to earthquakes or floods.
- $68 million of state funding has been invested over four years in the Levee System Improvements Program. The funding supported program implementation, levee system improvements, habitat development, beneficial reuse of dredged materials, emergency response, and studies. The actions benefit not only Delta water users and habitats, but also cities and farms elsewhere in the Bay Area, San Joaquin Valley and Southern California.

## CALFED Plan

Record of Decision (ROD)

The CALFED Plan includes the following Levee System Integrity goals:

- Provide funding for local reclamation districts to reconstruct Delta levees to a base level of protection (PL 84-99).
- Maintain and strengthen Delta levees, provide protection and enhancement of habitats and drinking water quality.
- Develop best management practices for beneficial reuse of dredged material.
- Refine Delta Emergency Management Plan and develop a Delta Risk Assessment.
- Develop a management strategy to identify risks to Delta levees, evaluate consequences and recommend actions.



## Levee System Integrity Accomplishments by Region

### Delta Region

- Provided funding to improve more than 43 miles of Delta levees up to the PL 84-99 limit, including projects on Sherman, Bradford and Jersey Islands and Webb Tract.
- Successfully reused approximately 900,000 cubic yards of dredged material to increase levee stability while enhancing habitat.
- Significant progress made on levee subsidence studies with a demonstration project launched on Twitchell Island and a strategic framework developed for addressing subsidence.
- Emergency response capabilities improved through draft Multi-Agency Emergency Response Plan, improved coordination and acquisition of flood fight materials.
- Studies initiated to analyze seismic risk to Delta levees.

### Bay Region

- Suisun Marsh Levee Investigation completed and efforts launched to develop a long-term plan for levee protection consistent with regulatory requirements and endangered species protection.

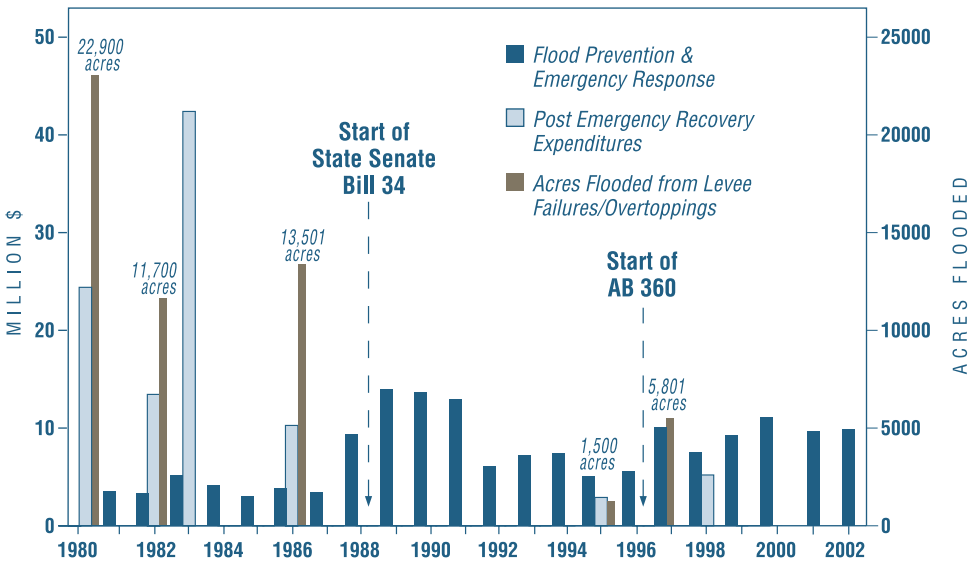
## Cross-regional Benefits

Though the Levee System Integrity Program is focused on the Delta region, investments there benefit other regions and the state as a whole. Examples include:

- Protecting water quality for millions of Californians who rely on the Delta for all or part of their water supplies.
- Stabilizing levees while enhancing habitat helps restore the Bay-Delta ecosystem, that in turn improves conditions for key species and increases water supply reliability for cities and farms in the Bay Area, San Joaquin Valley and Southern California.
- Reducing the risk of levee failures improves water supply reliability for water users in all regions.

## Delta Levee Flood Prevention Costs

*Post Disaster Assistance Costs and Acres Flooded*




*This indicator measures the number of acres in the Delta flooded each year. Flooding can cause significant damage, especially to agriculture, but to other land uses as well. Levees are also important for the control of salinity at key points in the Delta, and flooding at certain locations can thus threaten fresh water supplies crucial to a wide range of agricultural, urban, and ecosystem uses.*

*NOTE: Although final numbers are not yet available for 2003 and 2004, 12,000 acres of farm land on Jones Tract was flooded in June 2004.*

# LEVEE SYSTEM INTEGRITY

PROJECT HIGHLIGHT

## Jones Tract

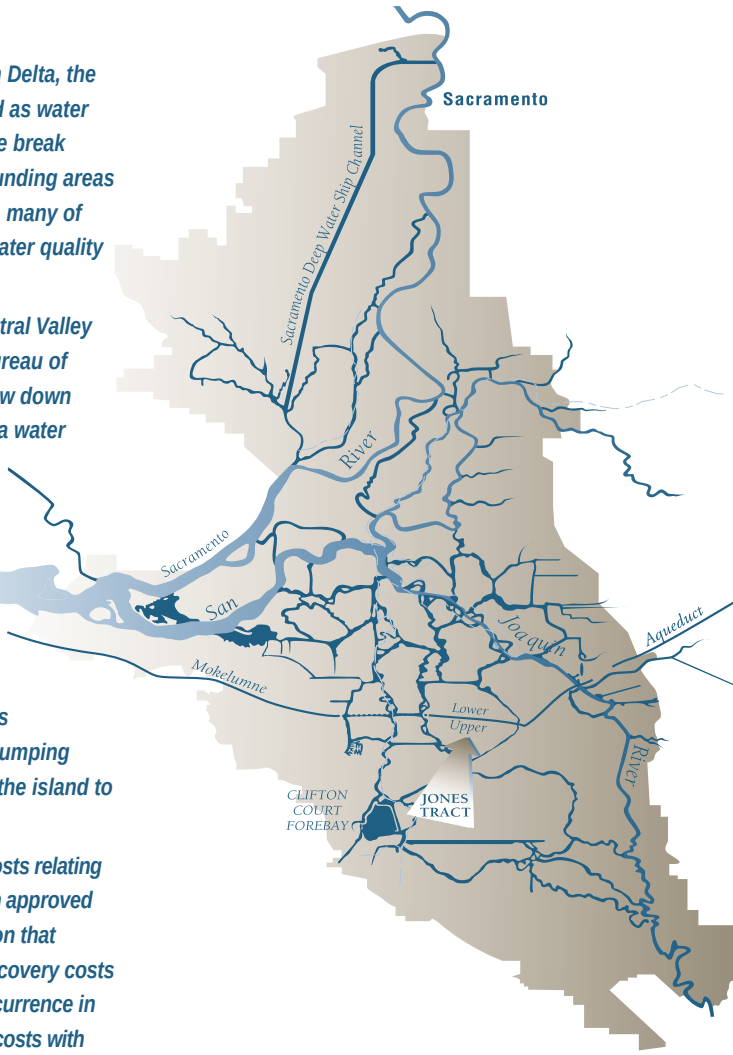
*June 3, 2004, during mild spring weather in the Sacramento-San Joaquin Delta, the unexpected happened – a levee on Jones Tract failed. The island flooded as water from Middle River gushed in filling all 12,000 acres of farmland. The levee break triggered a series of actions to protect water quality, property and surrounding areas while at the same time highlighting the tenuous situation that exists with many of the Delta's levees that help protect a way of life in the Delta along with water quality for many other Californians who depend on Delta water exports.*

*To protect water supplies for the State Water Project and the federal Central Valley Project, the state Department of Water Resources (DWR) and the U.S. Bureau of Reclamation (Reclamation) immediately began coordinated efforts to slow down pumping at the South Delta export facilities to reduce the intrusion of sea water and closely monitor water quality conditions. Reclamation increased releases of fresh water from Shasta Dam to control salinity and the Delta Cross-Channel Gates were opened to move fresher Sacramento River water into the Delta.*

*A series of emergency response actions led to the completion of the levee repair 27 days after the 300 foot-wide break. A short time later, pumping began to remove the water from the island. Because Jones Tract is below sea level, as many Delta islands are, it would take more than six months to remove the water. When the pumping operations started in mid July, about 140,000 acre-feet of water covered the island to an average depth of 12 feet.*

*While the cause of the levee failure will likely remain unknown, the overall costs relating to the disaster are currently placed at $90 million. President George W. Bush approved Governor Arnold Schwarzenegger's request for a major disaster declaration that provides federal financial assistance to cover emergency response and recovery costs for public entities, as well as hazard mitigation efforts to help prevent a recurrence in the area. The federal government will cover 75 percent of the total eligible costs with the state and local entities covering the remaining 25 percent.*

*This year, the unanticipated flooding of Jones Tract in the Delta has focused the issues surrounding the importance and stability of Delta levees. Preliminary research and analysis indicates that the Delta is becoming increasingly unstable as a result of sea level rise, continued land subsidence and the potential for earthquakes. With the passage of federal authorization in October 2004, it is even more important to receive federal appropriations as quickly as possible for the Levee Program. DWR has launched a multi-year risk assessment study to evaluate the potential risk of Delta levee failure. In addition, in response to this year's events, DWR has begun a comprehensive reassessment of the Delta levee program that may lead to future changes in strategy and approach for maintenance and improvement of Delta levees.*






## LEVEE SYSTEM INTEGRITY

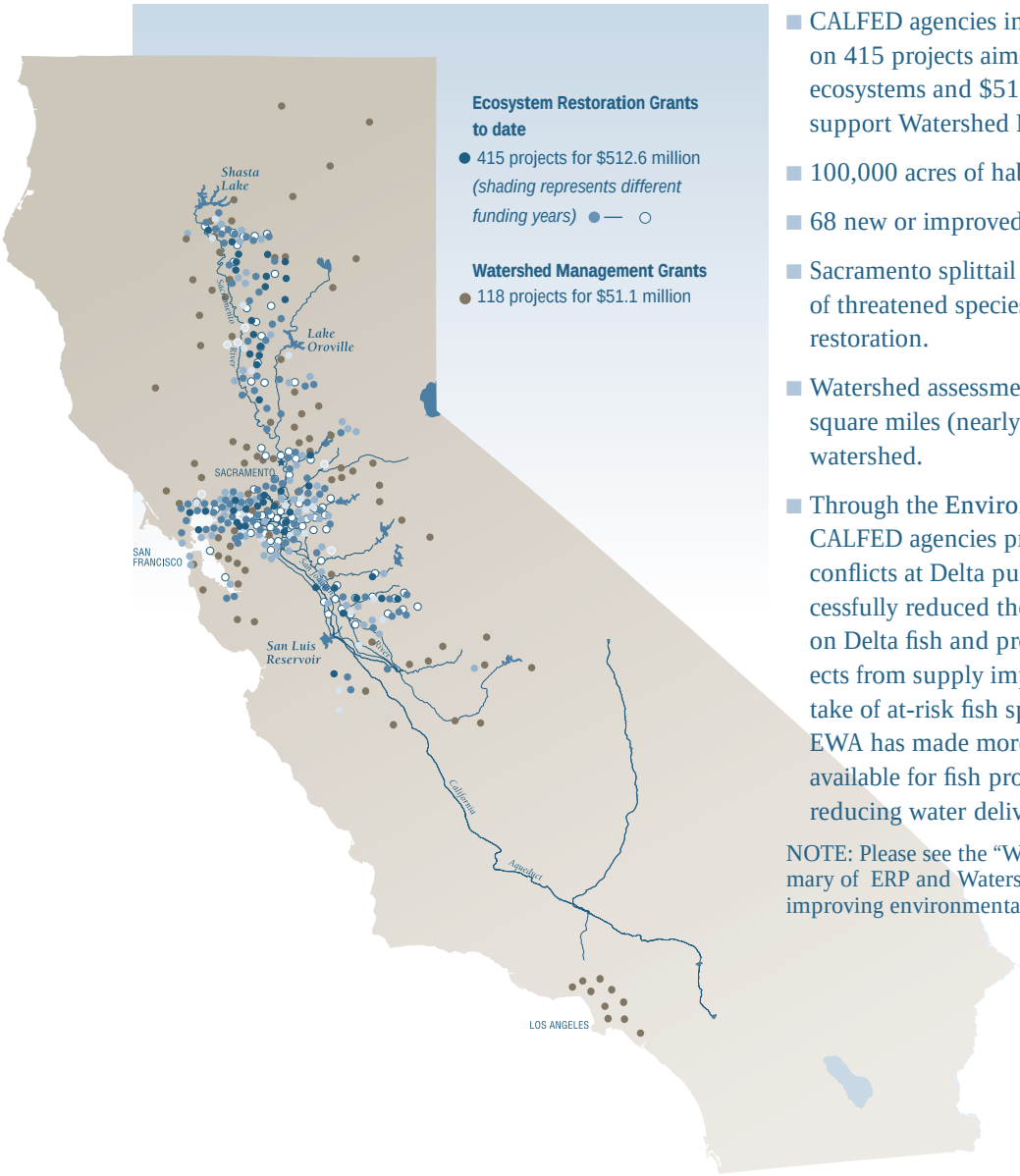
◆ Completed Milestone ▲ Remaining Milestone ●—● Present Schedule ◆—◆ Sub-Tasks ═══ Date Reporting Period Ends

| Program Element Summary Tasks | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|
| **Program Management** | 8/00 ●—● 12/07 | | | | | | | | |
| **Subventions (Delta)** | 8/00 ●—● 12/07 | | | | | | | | |
| *Process Applications, Present to CALFED Management, Reclamation Board Approval, and Claims Due (each year)* | ◆◆◆◆ ◆◆◆◆ ◆◆◆◆ ◆◆◆◆ ▲▲▲▲ (milestones repeat each year) | | | | | | | | |
| **a. Maintain Levees** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| *Miles maintained per year* | 683 miles ◆ 662 miles ◆ 719 miles ◆ 740 miles ▲ (milestones and miles repeat each year) | | | | | | | | |
| **b. Levee Enlargement** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| *Miles maintained per year* | 21 miles ◆ 11 miles ◆ 15 miles ◆ 6 miles ▲ (milestones and miles repeat each year) | | | | | | | | |
| **Special Projects (Delta)** | 8/00 ●—● 12/07 | | | | | | | | |
| **a. Develop BMP's for Dredged Material** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| | Institute Program for Use of Dredged Material ▲ 12/07 | | | | | | | | |
| **b. Levee Enlargement and Stability Improvements** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| *Miles enlarged and improved per year* | 9 miles ◆ 8 miles ◆ 4.3 miles ◆ 6 miles ▲ (milestones and miles repeat each year) | | | | | | | | |
| **c. Habitat Enhancement** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| *Acres and linear feet* | 21 acres/2000 lf ◆ 0 acres/3000 lf ◆ 0 acres ◆ 14 acres/0lf ▲ (milestones, acres and linear feet repeat each year) | | | | | | | | |
| **Levee Science Projects** | 8/00 ●—● 12/07 | | | | | | | | |
| | ▲ 6/04 - Begin Studies to Extend the Work Window | | | | | | | | |
| | ▲ 6/05 - Begin Studies on the Effect of Saline Dredge Material on Beneficial Reuse Habitat Restoration Sites | | | | | | | | |
| | ▲ 6/06 - Begin Water Quality Studies for Dredging | | | | | | | | |
| **a. Subsidence Research and Demonstration Projects** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| | ◆ 6/01 - Begin USGS Subsidence Study | | | | | | | | |
| | ◆ 6/02 - Begin Subsidence Reversal Demonstration | | | | | | | | |
| | ▲ 6/06 - Begin Implementation of Subsidence Reversal Techniques | | | | | | | | |
| **Emergency Response including Training & Development, Develop Mutual Support, Support Local Flood Fight Efforts, and Enhance Flood Fight Inventory** | 8/00 ●—● 12/07 | | | | | | | | |
| *(occurring as needed on an annual basis)* | ◆ 12/00 - Initiate Actions to Refine Delta Emergency Management Plan | | | | | | | | |
| | ◆ 6/04 - Purchase Flood Fight Boxes | | | | | | | | |
| | ▲ 6/05 - Delta- wide Asset Management Plan | | | | | | | | |
| | ▲ 6/04 - Improve Flood Fight Supply Inventory | | | | | | | | |
| **Risk Assessment** | 9/01 ●—● 8/06 | | | | | | | | |
| | ◆ 9/01 - Develop Contract Specifications | | | | | | | | |
| | ◆ 12/01 - Develop Delta Risk Management Strategy | | | | | | | | |
| | ◆ 8/03 - Award Risk Assessment Contract | | | | | | | | |
| | ▲ 8/04 - Evaluate Contract Findings | | | | | | | | |
| | ▲ 8/05 - Implement Changes to Reduce Risk | | | | | | | | |
| **Comprehensive Program Evaluation** | 2/05 ●—● 6/07 | | | | | | | | |
| **Beneficial Reuse of Dredged Material** | 8/00 ●—● 12/07 | | | | | | | | |
| *Cubic yards (cy) reused* | 198,200 cy ◆ 288,500 cy ◆ 22,000 cy ◆ 375,000 cy ▲ (milestones and volume of material repeat each year) | | | | | | | | |
| **Suisun Marsh** | 8/00 ●—● 12/07 | | | | | | | | |
| **a. Levees Program Suisun Marsh** | 8/00 ◆—◆ 12/07 | | | | | | | | |
| | ◆ 6/01 - Coordinate with Local Interests | | | | | | | | |
| | ◆ 6/02 - Levee Projects on Van Sickle and Honker Island | | | | | | | | |
| | ▲ 6/04 - Habitat Levee and Microtidal Demonstration Project | | | | | | | | |
| | ▲ 6/04 - Maintenance Dredging Demonstration Project | | | | | | | | |
| | ▲ 6/05 - Implement Subventions & Special Projects | | | | | | | | |
| | ▲ 6/06 - Levee Projects | | | | | | | | |

# ECOSYSTEM RESTORATION & WATERSHED MANAGEMENT

The CALFED agencies are implementing the Ecosystem Restoration Program to improve the ecological health of the Bay-Delta watershed through restoring and protecting habitats, ecosystem functions and native species. The Watershed Program funds, coordinates and provides technical support for local watershed activities. Highlights of cumulative accomplishments of both programs in the first four years include:

## Ecosystem and Watershed Projects




## Summary of Accomplishments

- CALFED agencies invested more than $512 million on 415 projects aimed at improving and restoring ecosystems and $51.1 million in 118 projects to support Watershed Management goals.
- 100,000 acres of habitat protected or restored.
- 68 new or improved fish screens installed.
- Sacramento splittail removed from the federal list of threatened species due to progress on habitat restoration.
- Watershed assessments were developed on 4,652 square miles (nearly 3 million acres) of the Bay-Delta watershed.
- Through the Environmental Water Account (EWA), CALFED agencies protected fish and reduced conflicts at Delta pumping facilities. EWA has successfully reduced the direct effects of water exports on Delta fish and protected the state and federal projects from supply impacts due to excessive incidental take of at-risk fish species. In the past four years, the EWA has made more than 1 million acre-feet of water available for fish protection measures without reducing water deliveries to other uses.

NOTE: Please see the "Water Quality" section for the summary of ERP and Watershed Program efforts related to improving environmental water quality.



## CALFED Plan
### Record of Decision (ROD)

The CALFED Plan includes the following Ecosystem Restoration and Watershed Management goals:

- Restore habitat in the Delta and its tributary watersheds.
- Augment stream flow in upstream areas through voluntary water purchases of up to 100,000 acre-feet annually for native fish.
- Improve fish passage through modification or removal of dams, improved bypasses, screens and ladders.
- Integrate flood management and ecosystem restoration.
- Build local capacity to assess and effectively manage watersheds that affect the Bay-Delta system; develop watershed assessments and plans; implement specific watershed conservation, maintenance and restoration actions.
- Manage an Environmental Water Account to provide benefits to fish as well as water supply reliability to farms and cities.

## Accomplishments of the Ecosystem Restoration & Watershed Program

- In 2004, the ERP Implementing Agencies completed a comprehensive assessment of the progress towards achieving the restoration-related milestones identified for the CALFED Program. This assessment found that progress on nearly 80 percent of the milestones was on or ahead of schedule. This progress was sufficient to allow regulatory agencies to continue coverage under the state and federal Endangered Species acts for the entire CALFED Program as well as commitments to continue state and federal Delta water exports without additional reductions to protect key fish species.
- The "Mercury Strategy for the Bay-Delta Ecosystem: A Unifying Framework for Science, Adaptive Management, and the Ecological Restoration," was completed and $30 million invested to build the scientific foundation for assessing and reducing mercury-related risks in the Bay-Delta ecosystem.
- A Request For Proposals was released in September 2004 to continue monitoring and evaluating ecosystem restoration actions, or groups of restoration actions, previously funded through the ERP.
- Approximately $25.5 million was invested in 35 new projects during the past year to community-based organizations for projects addressing watershed health, drinking water quality, non-point sources of pollution and watershed protection. Many of these grants also support ERP goals.
- A comprehensive review of the first 54 watershed projects funded since 2001 was completed showing that CALFED watershed projects are making significant contributions toward improved water quality, water supply reliability, and ecological health.

## Cross-Regional Benefits

The Bay-Delta Program's regional approach emphasizes local involvement and strives to address local issues and needs. But many actions in specific regions directly benefit other regions and the state as a whole. These include:

- Improved habitat contributes to improving the overall health of the Bay-Delta estuary and key species, which in turn results in greater water supply reliability for water users in much of the state.
- Environmental Water Account activities provide water to protect native fisheries in the Delta and improve water supply reliability for cities and farms in the Bay Area, San Joaquin Valley and Southern California.
- Investments in water quality research help guide management actions to reduce the effects of contaminants.

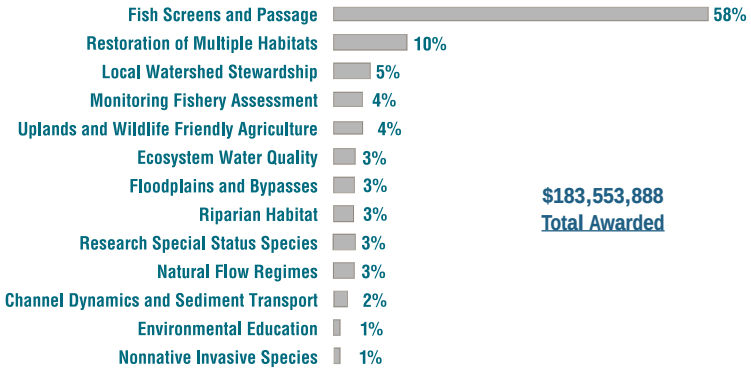
# ECOSYSTEM RESTORATION & WATERSHED MANAGEMENT

More than $512 million has been awarded to date for more than 400 Ecosystem restoration projects. Ecosystem restoration efforts continue to improve habitat and address the needs of key species. Accomplishments include:

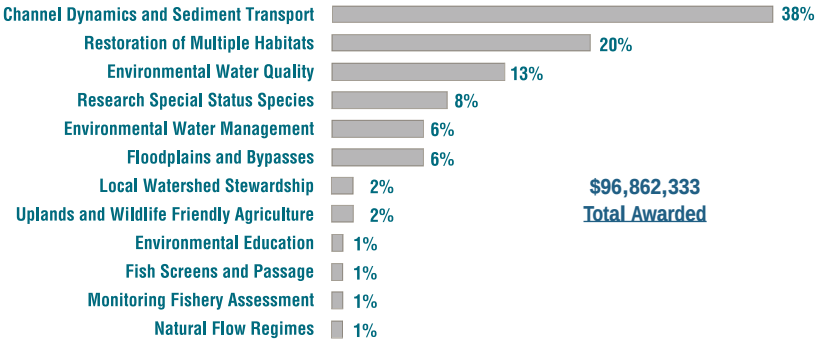
- Single blueprint approach adopted
- 100,000 acres of habitat protected or restored
- 68 new or improved fish screens constructed
- 23 comprehensive scientific studies undertaken
- Contribution made to meeting regulatory commitments for all Program elements

## Regional Spending

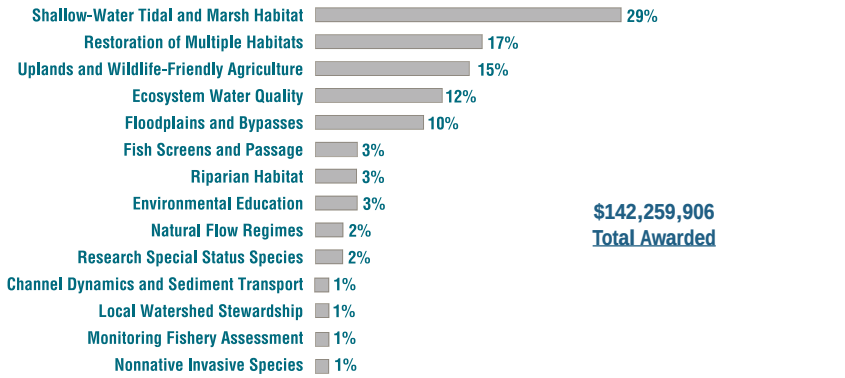
*Percent of total spent on Sacramento River Region ERP Actions*




*Percent of total spent on San Joaquin River Region ERP Actions*



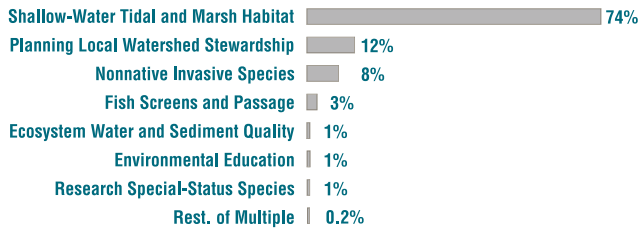

*Percent of total spent on Delta and Eastside Tributaries Region ERP Actions*



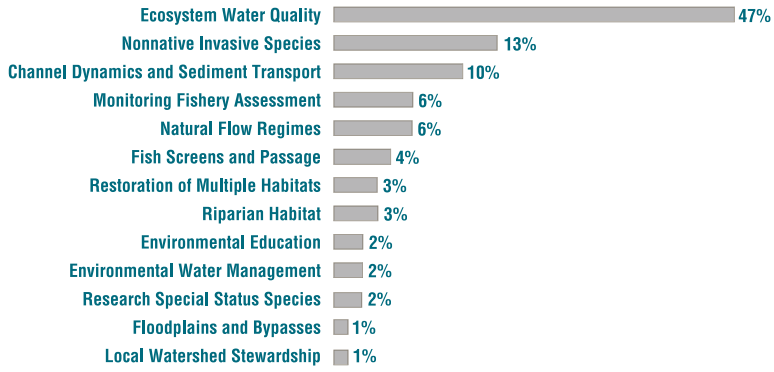


## Regional Spending (cont.)

*Percent of total spent on Bay Region ERP Actions*

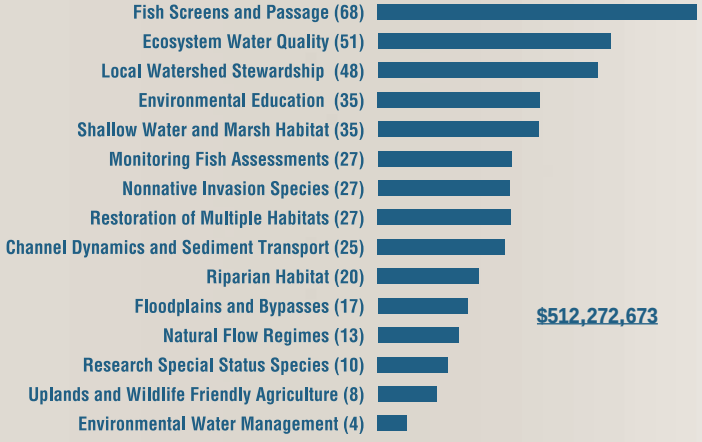



*Percent of total spent on ERP Actions with cross-regional benefits*

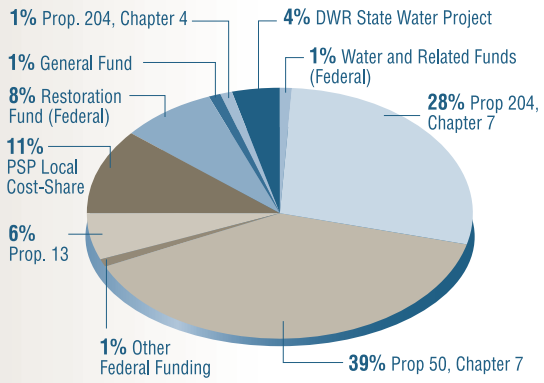



## Total Spending

*Types and number of restoration projects funded by the ERP*




*Fund sources and percentages of funding to support Ecosystem Restoration Program in 2004*




**$172,920,000**

*(Amount includes $7,268,000 from State Water Project for mitigation and $20,000,000 in local cost share which are not counted toward the $150 million commitment toward the Ecosystem Restoration Program.)*

# ECOSYSTEM RESTORATION & WATERSHED MANAGEMENT

PROJECT HIGHLIGHT

## Assessing Progress toward Milestones

*Improving the status of endangered or threatened plants, animals and their habitats is one of the central commitments of the CALFED Program. This commitment is embodied in the 2000 CALFED Programmatic Record of Decision (ROD) and attendant regulatory agreements regarding actions of the Ecosystem Restoration Program (ERP). To gauge progress toward the ERP's goal for recovery of at-risk species, the endangered species regulatory agencies identified 119 milestones in 2000 that were expected to be achieved by the end of the 7-year-long Stage 1.*

*In July 2004 the ERP Implementing Agencies completed a mid-Stage 1 assessment of progress toward achieving the 119 milestones listed in the ROD. The assessment considered 416 ERP contracts, 83 Watershed Program contracts, and 68 Central Valley Project Improvement Act contracts, and also contained an evaluation of the efficacy of the Environmental Water Account. On September 30, 2004, the regulatory agencies concluded that the CALFED Program is meeting its substantial commitment to reviving California's Bay-Delta ecosystem while improving the reliability of the state's water supplies. As a result of that conclusion, the CALFED agencies extended the EWA and the CALFED Program commitment to not reduce water deliveries from the Delta for three more years. Progress toward milestones indicates that the CALFED Program is investing in actions that are expected to help recover at-risk species.*

*Highlights from the assessment include:*

- *Nearly 80 percent of the 119 milestones provided for in CALFED's Stage 1 are on or ahead of schedule.*
- *More than 11,000 acres of wildlife-friendly agriculture was protected in the Delta, meeting the Stage 1 target for the region.*
- *More than 50,000 acres of seasonal wetlands in the Sacramento River Region are being enhanced, protected or restored.*
- *About 500 acres of fresh emergent wetlands in the San Joaquin River Region are being enhanced, protected or restored.*
- *Most of the environmental water quality milestones are being addressed by the 51 projects funded by the ERP; approximately 40 percent of those projects affect multiple regions.*

**Summary of Milestone Assessment for Quantified Target Categories for Stage 1**

| Target Category | Stage 1 Target | Accomp. to Date | Percent Complete |
|---|---|---|---|
| **Bay Region** | | | |
| Riparian Habitat Miles | 15 miles | 3 miles | 20% |
| Perennial Aquatic Habitat | 400 acres | 400 acres | **Completed** |
| Vernal Pool Habitat | 1,100 acres | 1,350 acres | **Completed** |
| Fish Screen Consolidation or Screen | 108 diversions | 7 diversions | 7% |
| **Delta Region** | | | |
| Wildlife Friendly Agriculture | 6,000-11,250 acres | 11,891 acres | **Completed** |
| Delta Slough | 15 miles | 1 mile | >1% |
| Fresh Emergent Wetlands (non tidal) | | | |
| North Delta | 500 acres | 142 acres | 28% |
| East Delta | 250 acres | 0 | – |
| South Delta | 1,000 acres | 0 | – |
| Central and West Delta | 2,500 acres | 224 acres | 9% |
| Tidal Emergent Wetlands | | | |
| North Delta | 500 acres | 4,760 acres | **Completed** |
| East Delta | 500 acres | 32 acres | 6% |
| South Delta | 4,000 acres | 0 acres | – |
| Central and West Delta | 5,000 acres | 259 acres | 5% |
| Inland Dune Scrub | 50 acres | 0 | – |
| Midchannel Islands and Shoals | | | |
| Channel Islands | 125 acres | 5 acres | >1% |
| Shoals | 125 acres | 0 acres | – |
| Riparian Habitat | | | |
| Miles | 50-95 miles | 83 miles | 87% |
| Acres | 300 acres | 5,227 acres | **Completed** |
| Seasonal Wetlands | 1,000-1,500 acres | 1,350 acres | 90% |
| Tidal Perennial Aquatic | | | |
| North Delta | 500 acres | 0 acres | – |
| East Delta | 250 acres | 0 acres | – |
| South Delta | 500 acres | 0 acres | – |
| Central and West Delta | 750 acres | 426 acres | 57% |
| Fish Screens | 50 diversions | 29 diversions | 58% |
| **Sacramento River Region** | | | |
| Wildlife Friendly Agriculture | 298,646 acres | 298,643 acres | **Completed** |
| Riparian Habitat Miles | 40 miles | 17 miles | 85% |
| Seasonal Wetlands | 4,325 acres | 50,868 acres | **Completed** |
| Fish Screens | | | |
| >250 cfs | 38 diversions | 21 diversions | 55% |
| <250 cfs | 226 diversions | 85 diversions | 38% |
| **San Joaquin River Region** | | | |
| Wildlife Friendly Agriculture | 2,293-3,822 acres | 0 acres | – |
| Fresh Emergent Wetlands (nontidal) | 100 acres | 500 acres | **Completed** |
| Perennial Grasslands | 1,000 acres | 0 acres | — |
| Riparian Habitat | | | |
| Miles | 12 miles | 5 miles | 42% |
| Acres | 303 acres | 6,569 acres | **Completed** |
| Fish Screens | | | |
| >250 cfs | 2 diversions | 1 diversion | – |
| <250 cfs | 118 diversions | 0 diversions | 50% |



## Ecosystem Restoration Program: Integrating agricultural activities with ecosystem restoration

***These are the four main areas of ERP investment for integrating agricultural activities with ecosystem restoration:***

***Conservation Incentives:*** *Providing incentives and technical assistance (including research and monitoring) to landowners to voluntarily implement conservation-based farm management*

***Conservation Easements:*** *Working with willing sellers, easements allow conservation of important agricultural land and ecosystem benefits while maintaining private ownership of land.*

***Fish Friendly Irrigation Systems:*** *Contributing toward improved fish passage that facilitates continued irrigation of agricultural land.*

***Planning:*** *Developing plans that support actions landowners can voluntarily undertake to improve environmental quality in their watershed.*

PROJECT HIGHLIGHT

### Working Lands and the Ecosystem Restoration Program

*Most Central Valley land is private farmland. The CALFED Program has worked since its inception to address the concerns of agricultural landowners while meeting its commitments to managing the Bay-Delta water supply and restoring key ecosystems. One hallmark of this effort is to encourage farming practices that maintain agricultural land while benefiting fish, wildlife, and clean water.*

*In Year 4 of Stage 1, CALFED agencies continued to improve wildlife and fish habitat on farms and advance the applied knowledge through which agricultural landowners can address ecosystem restoration goals.*

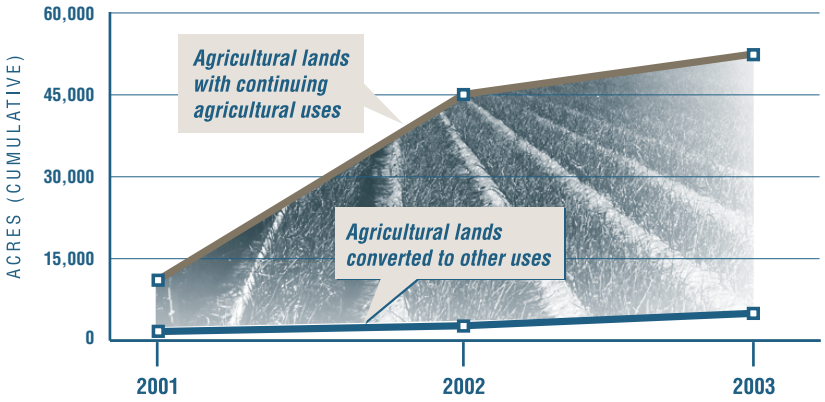
*Since the ROD was issued in 2000:*

- *The ERP has underwritten the protection of more than 54,000 acres of agricultural land, largely through easements. Post-ROD restoration projects have converted fewer than 3,500 agricultural acres to other uses. (See figure below)*
- *The ERP has provided technical assistance to ranchers, wine grape growers, rice producers and other farmers through multiple projects. These projects provide farmers with the tools to implement voluntary innovative on-farm practices to enhance habitat while providing opportunities to improve land productivity and profitability.*
- *The ERP has invested more than $114 million to screen agricultural diversions to allow for fish passage and to help keep fish out of irrigation water diversions.*

***Stakeholder Involvement***

*The Working Landscapes Subcommittee provides a valuable forum for stakeholders to discuss important issues, share information, and formulate recommendations for the Bay-Delta Public Advisory Committee. In the two years since its formation, the subcommittee has taken on challenging topics in its diverse forum. It has provided recommendations on the use of ERP funds to integrate agricultural activities with ecosystem restoration, suggestions to address the impacts of CALFED projects on local tax revenues, and recommendations on the need for better social science and economic analysis in CALFED's Science Program. The diverse views of the subcommittee's participants – from environmentalists to commodity groups – provide a rich forum for discussion as well as opportunities for integrated recommendations. Better communication among stakeholders and CALFED agencies – a core CALFED operating principle – is an important by-product of the subcommittee's activities.*

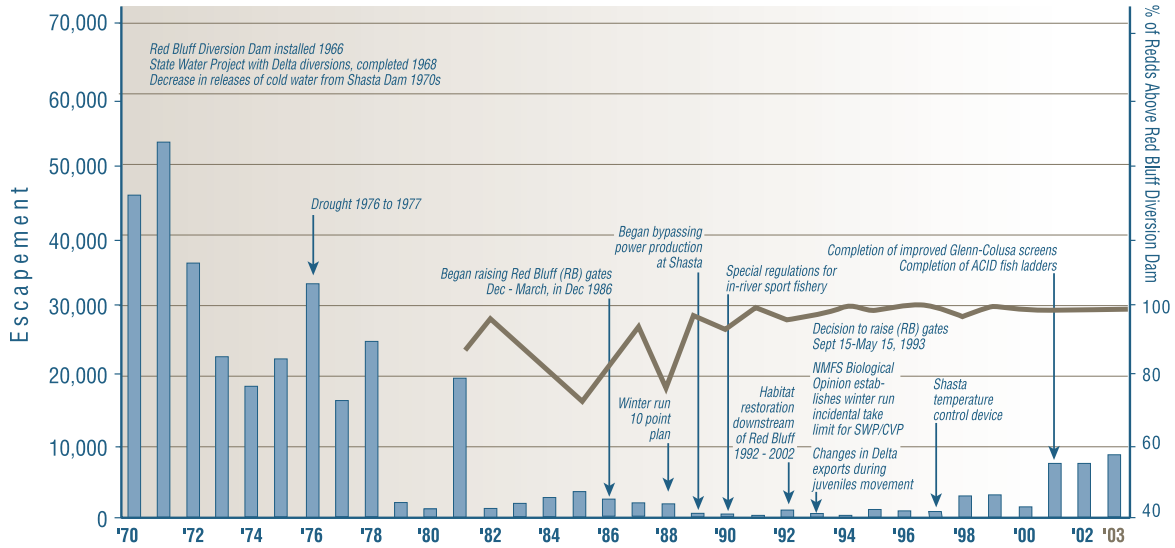
ERP Acquisition Trends



# ECOSYSTEM RESTORATION & WATERSHED MANAGEMENT

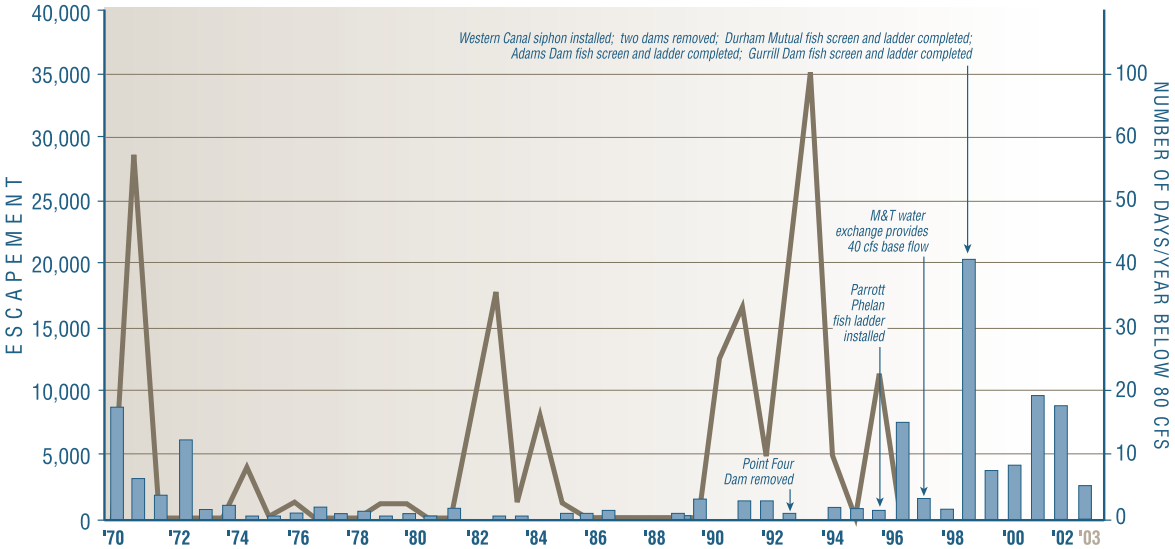
## Ecosystem Restoration Performance Measures

### *Sacramento River Winter Run Chinook Salmon*




*This performance measure reports the escapement (the number of adult salmon escaping mortality and successfully returning each year to spawn) of adult winter-run Chinook salmon, an endangered species under the state and federal Endangered Species acts, on the Sacramento River. The Sacramento River population is the only remaining population of winter-run Chinook salmon.*

### *Spring Run Chinook Salmon on Butte Creek*



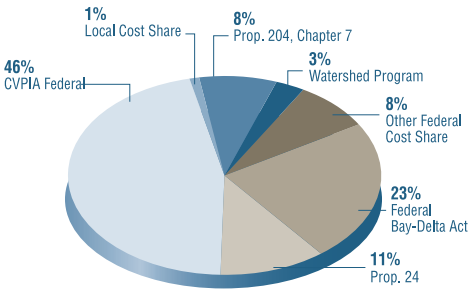

*This performance measure reports the escapement (the number of adult salmon escaping mortality and successfully returning each year to spawn) of adult spring-run Chinook salmon, a threatened species under the state and federal Endangered Species acts, on Butte Creek. The Butte Creek population is one of the few remaining self-sustaining populations of spring-run Chinook salmon in the Central Valley. The spring-run in Butte Creek has been affected by significant impediments to upstream passage of adults stemming from dams, inoperative fish ladders, and reduced flows as a result of water diversions. Since 1995, restoration actions have included dam removal, installation and/or repair of fish ladders and fish screens, and improvements to base flow.*



PROJECT HIGHLIGHT

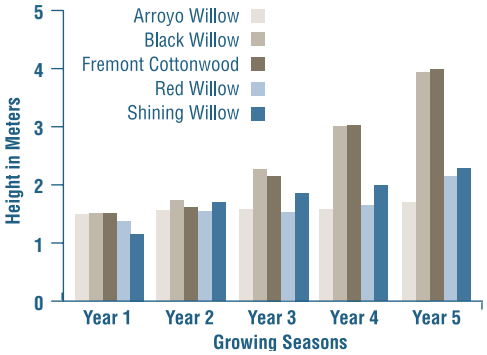
## Clear Creek Accomplishments

*Fund sources and percentage of funding for Clear Creek Restoration actions*




**$21 Million**

### Riparian Plant Growth in Restored Floodplains

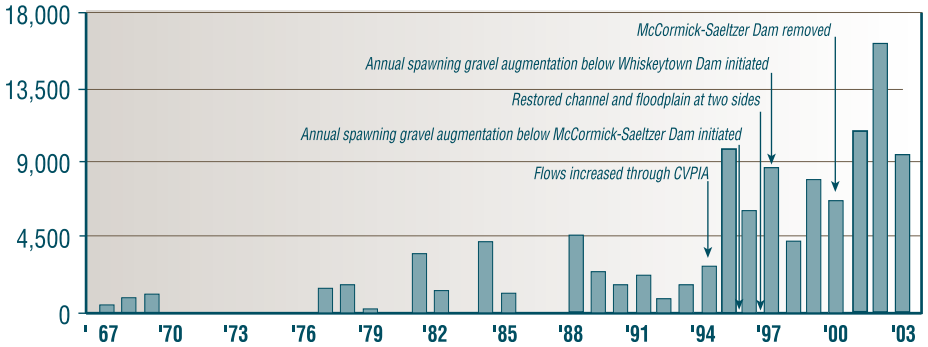



***Clear Creek in Shasta County provides an example of the benefits of ecosystem restoration investment. Stressors that adversely impact fish and wildlife and their habitats in the watershed include dam construction, water diversion, mining and clear-cutting. Substantial, focused investments in the Clear Creek watershed by its many partners have shown notable progress toward milestones and targets, and positive responses by target species and their habitats. Since 1995, 13 agencies provided more that $21 million for 80 projects in the watershed ranging from stream channel restoration to fire prevention (see chart at upper left).***

***Many of the ERP milestones and targets have been reached for Clear Creek. Of the nine milestones that specifically identify Clear Creek, all nine are complete or on schedule. Of the 10 targets related to Clear Creek for Stage 1, nine are complete or in progress. Examples of progress toward milestones and targets include removal of McCormick-Saeltzer Dam in 2000, opening access to 12 miles of Clear Creek for salmon and steelhead. Stream temperature targets for spring-run Chinook and steelhead have been achieved. Three miles of the eight-mile target for restoring riparian habitat have been achieved, providing valuable habitat for songbirds and other species. Most flow targets for Clear Creek have been achieved through CVPIA actions. The Environmental Water Program is working to secure additional instream flows to reinvigorate natural stream channel and riparian processes on Clear Creek, complementing other habitat restoration actions.***

***While milestones and targets were achieved, the average number of fall-run Chinook salmon returning to Clear Creek increased more than 400 percent over the 1967 to 1991 baseline (see graph below). There has also been a noticeable increase in habitat use by riparian song birds with successful riparian plant and growth in restored floodplains (see graph at left). In 2004, restored sites showed a 40 percent increase in nest success from key songbirds, and the California endangered western yellow-billed cuckoo was sighted for the first time ever on Clear Creek and in Shasta County. Restoration efforts aimed at creating large tracts of riparian forest that this species is dependent upon may provide breeding habitat for this endangered species. Additional restoration and monitoring are expected to reveal continued positive trends for target species and habitats.***

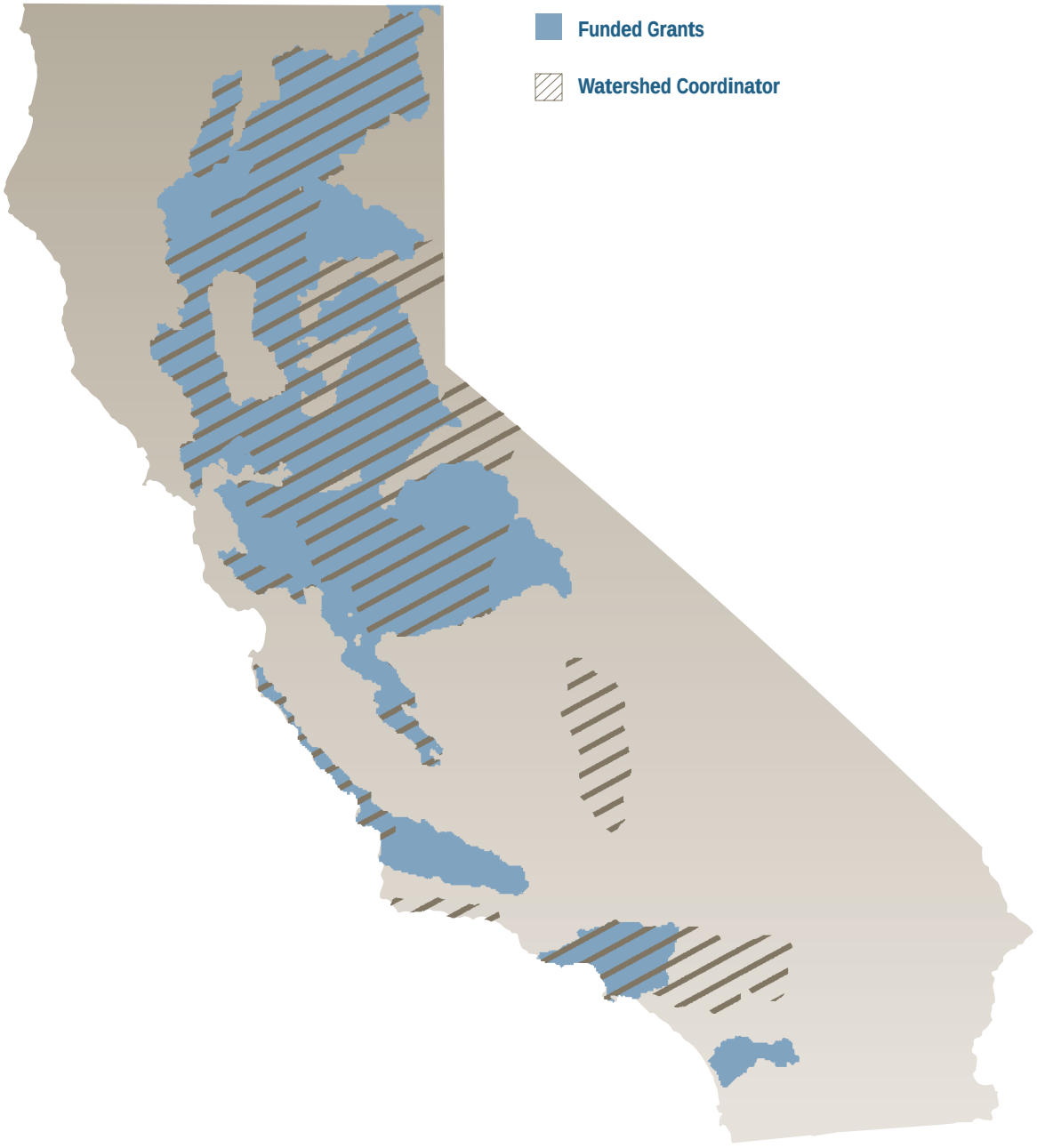
### Fall-Run Chinook Salmon on Clear Creek




*This performance measure reports the number of adult fall-run Chinook salmon successfully returning each year to spawn on Clear Creek. The habitat to support the fall-run on Clear Creek had been adversely impacted by dam construction, water diversion, mining and clear-cutting. Since 1995, restoration actions have included increasing stream flows, augmenting spawning gravel, restoring channel and floodplains, and removing the McCormick-Saeltzer Dam.*

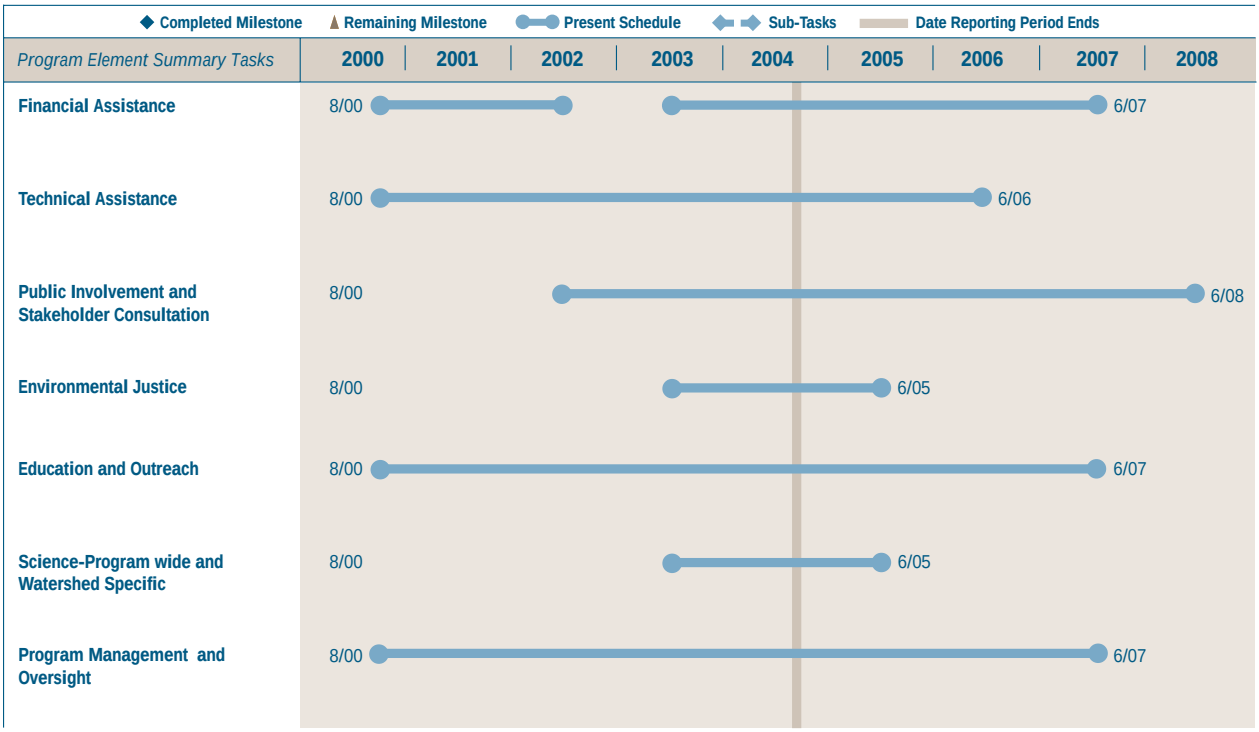
# ECOSYSTEM RESTORATION & WATERSHED MANAGEMENT

## Watersheds with Funded Grant Projects & Contributions

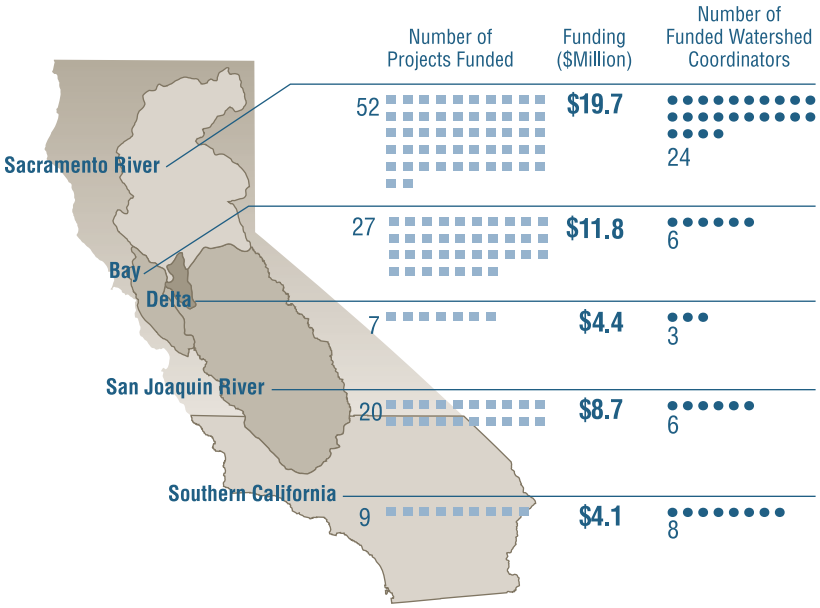




## WATERSHEDS




## Watershed Accomplishments




*NOTE: In addition to these projects, there are three statewide projects totaling $3.4 million*

# SCIENCE

Incorporating the best-available scientific knowledge into all CALFED Program activities and decisions is the goal of the CALFED Science Program. In addition to exploring questions specific to individual projects, the Science Program focuses on large-scale issues that cut across multiple program objectives and regions and address critical resource management questions facing the CALFED Program.

## Summary of Accomplishments

- First year of operation completed for Independent Science Board, with work launched on complex and challenging issues such as Delta levee integrity, the Delta Improvements Package, Environmental Water Programs and Ecosystem Restoration integration, and performance assessment.
- First Science Program Proposal Solicitation Package (PSP) developed and released. Approximately $20 million will be spent to improve knowledge of key aquatic species, further the understanding of ecosystem processes in the Sacramento-San Joaquin Delta and its tributaries, and to gain a framework for assessing future change.
- Formal post-doctoral research program started, the SeaGrant Science Fellows, to bring together academic scientists, CALFED agency scientists and senior research mentors in collaborative data analysis and research projects relevant to Program objectives.
- Fourth technical review of the Environmental Water Account successfully completed, and technical workshop completed in the fall of 2004 to consider EWA implementation and its affect on delta smelt and salmonids.
- Several workshops convened to address relevant and topical issues. Highlights for 2004 included a workshop focusing on gravel augmentation and trends in river restorations, a technical conference on Suisun Marsh, and a workshop that took a comprehensive look at contaminant issues in the Bay-Delta.
- Third biennial CALFED Science Conference organized, bringing together scientists, managers, and policy-makers in an open environment to discuss the latest scientific findings relevant to the Bay-Delta system. The three-day conference was attended by more than 1,200 people and included 239 oral presentations and approximately 185 posters.
- Studies and analyses launched in areas of Delta water quality, sediment, hydrodynamic processes, and fish tracking supported.
- Guidance provided for Program performance measures and indicators to assess how projects and programs are meeting their objectives.

## Science Program Reviews and Workshops – 2004

**Program Level Reviews**

*EWA Technical Review Panel*

*CALSIM II Review*

**Project Level Reviews**

*Battle Creek*

**Workshops**

*Contaminant Stressors in the Bay-Delta Workshop*

*Making Science Work for Suisun Marsh Workshop*

*Gravel Workshop*

*EWA Salmonid and Delta Smelt Workshop*

**Symposia**

*Water Operations II Symposium*

**Conferences**

*3rd Biennial CALFED Science Conference*



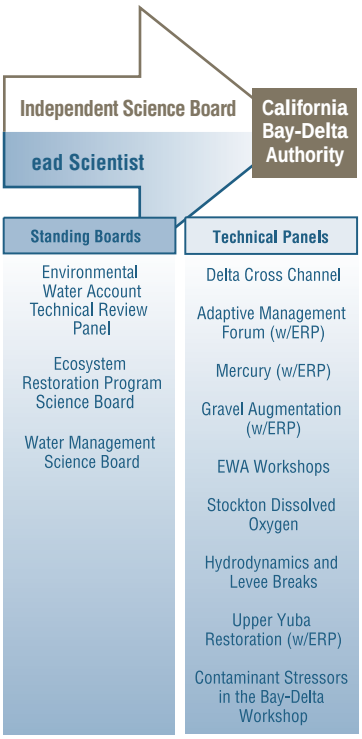
## Message from Lead Scientist Dr. Johnnie Moore

To ensure that the best available scientific information is applied in a credible manner, the Authority structure includes significant roles for the Lead Scientist and the Independent Science Board. Both report directly to the California Bay-Delta Authority and have significant responsibilities to provide broad guidance and oversight to implementation of the CALFED Record of Decision that include the translation of management issues into scientific questions that can be integrated into CALFED agency actions.

The Lead Scientist, working with the Authority staff, CALFED agencies and stakeholder interests, has the responsibility for developing the specific scientific questions that standing boards or panels address. The Science Program approach to advising the CALFED agencies during implementation of the CALFED Record of Decision includes near-term and mid-term strategies. Near-term efforts are conducted over the next year; mid-term strategies focus on a longer timeframe of at least several years.

In the near-term, the Science Program works with the CALFED agencies to present workshops on important management issues and provide independent annual technical reviews of various CALFED programs (e.g., the Environmental Water Account), and reviews of management tools (e.g., the CALSIM II model) and scientific studies (e.g., the Delta Cross Channel studies) used to inform various actions and provide insight into the design and implementation of various programs.

## Science Board and Technical Panels




Over the mid-term, the goal of the Science Program is to identify issues that are and will be of substantial concern regionally, over the next several years to decades, and that affect the CALFED Program's goals of water supply and ecosystem sustainability. To meet this goal, the Science Program funds targeted research through a competitive proposal solicitation process. Another mid-term challenge for the Science Program is to educate a wide array of Californians about the scientific challenges confronting the CALFED agencies, why these issues are important to address, and how the state and federal agencies plan to approach these challenges during implementation of the CALFED Record of Decision. The biannual CALFED Science Conference, the San Francisco Estuary and Watershed Science online journal, Science-in-Action papers and Management Cues publications are all major communications efforts to help inform California citizens and agency staff.

## 2004 Independent Science Board Members

**Ken Cummins, Ph.D.**
*Senior Advisory Scientist, California Cooperative Fisheries Unit, and Adjunct Professor, Humboldt State University*

**Thomas Dunne, Ph.D.**
*Professor, Donald Bren School of Environmental Science and Management and of Geological Sciences, University of California Santa Barbara*

**David Freyberg, Ph.D.**
*Associate Professor, Department of Civil & Environmental Engineering, Stanford University*

**William Glaze, Ph.D.**
*Professor, Department of Environmental and Biomolecular Systems, Oregon Health and Science University*

**Helen Ingram, Ph.D.**
*Professor of Social Ecology, University of California, Irvine*

**Jack Keller, Ph.D.**
*Principal, Keller-Bleisner Engineering, and Professor Emeritus, Utah State University*

**Jeff Koseff, Ph.D.**
*Professor of Environmental Fluid Mechanics in the Department of Civil and Environmental Engineering, Stanford University*

**Samuel Luoma, Ph.D.**
*Senior Research Hydrologist with the US Geological Survey*

**John Melack, Ph.D.**
*Professor, Donald Bren School of Environmental Science and Management, and Department of Ecology, Evolution and Marine Biology, University of California, Santa Barabara*

**Judith Meyer, Ph.D.**
*Distinguished Research Professor of Ecology, University of Georgia*

**Jeff Mount, Ph.D.**
*Professor, Department of Geology, University of California, Davis*

**Duncan Patten, Ph.D.**
*Research Professor, Montana State University*

**Denise Reed, Ph.D.**
*Professor, Department of Geology and Geophysics, University of New Orleans*

**Kenneth Rose, Ph.D.**
*Professor, Department of Oceanography & Coastal Sciences/Coastal Fisheries Institute, Louisiana State University*

**Robert Twiss, Ph.D.**
*Professor, Graduate Center for Environmental Design Research, University of California, Berkeley*

PROJECT HIGHLIGHT

## Independent Science Board

*The Independent Science Board (ISB) is a standing board of distinguished experts (scientists and engineers) with a range of multi-disciplinary expertise. The ISB advises and makes recommendations to the Authority and the Bay-Delta Public Advisory Committee, as appropriate, on the science relative to the implementation of all program elements.*

*The role and importance of the ISB is paramount to addressing water resources and management decisions because comments and recommendations from the ISB serve as a foundation to help guide the Authority while addressing complex, long-term problems.*

*The ISB does not pass direct judgment on the success or failure of the Authority's programs; rather, it provides insights that can make the science underlying those programs, the application of that science, and the technical aspects of those programs the best that they can be. The benefit of their work and that of other standing boards and technical panels is increased transparency and accountability for implementation across CALFED programs.*

- *Recent activities of the ISB have included initial review and recommendations to the Authority regarding the Delta Improvements Package. These recommendations called for new assessments, reinforcements, and approaches to existing monitoring programs to preserve long-term data sets; a continuation and integration of modeling efforts to consider long-term, ecosystem-wide benefits and risks; and the development of guidelines for incorporating current scientific knowledge and procedures into technical documents that support Authority decisions.*
- *The ISB is currently conducting fact-finding for several scientific topics including the status of knowledge on the integrity of Delta levees, monitoring and modeling, and EWA/ERP integration.*

*The ISB is one part of the independent review system the Authority, and its staff, or CALFED agencies have used, and will continue to use, to integrate, review and advise across the CALFED Program. Other standing boards that provide independent review are the EWA Technical Review Panel, the ERP Science Board, and the newly formed Water Management Science Board. More information about the ISB and other standing technical boards can be found at http://science.calwater.ca.gov/sci_tools/isb.shtml*

PROJECT HIGHLIGHT

## Journal Highlight

*PUBLICATION OF* SAN FRANCISCO ESTUARY AND WATERSHED SCIENCE *JOURNAL AND ARCHIVES*

San Francisco Estuary and Watershed Science *is an open access, peer-reviewed, electronic journal. The Journal focuses on contemporary scientific findings in the science of estuaries and watersheds, with a particular emphasis on the San Francisco Estuary and the watersheds that drain into it. The Journal was developed as a communication tool in support of the Science Program's mission for integrating world-class science and peer-review into every aspect of the CALFED Program. San Francisco Estuary and Watershed Archive is a companion service to the peer-reviewed electronic journal. The Archive provides Internet access to important historical documents, such as surveys, project reports, strategic planning reports, maps, and collections of articles currently out of print. Both the Journal and Archive were developed by the California Bay-Delta Authority Science Program, the California Digital Library, the University of California - Davis, and the John Muir Institute of the Environment.*

- *Three Journal issues have been published since October 2003 – each presenting a different type of scholarly work: an edited volume, a monograph, and a collection of standard "journal-length" articles.*
- *Journal content is indexed by several online reference libraries, allowing for wider accessibility, leading to increased visibility and submission.*
- *Web site hits to the Journal exceeded 3,000 for the first volume and hundreds of hits for subsequent volumes.*
- An Historical Review of the Fish and Wildlife Resources of the San Francisco Bay Area, *by John Skinner and published by the California Department of Fish and Game, is now available through the Archive.*
- *In 2005, the Archive will post* San Francisco Bay: the Urbanized Estuary, *edited by T. John Conomos and published by the Pacific Division AAAS.*

SAN FRANCISCO ESTUARY & WATERSHED SCIENCE

Published by the California Bay-Delta Authority Science Program and the John Muir Institute of the Environment

San Francisco Estuary and Watershed Science *can be accessed at http://www.estuaryscience.org.*

San Francisco Estuary and Watershed Archive *can be accessed at http://www.estuaryarchive.org.*



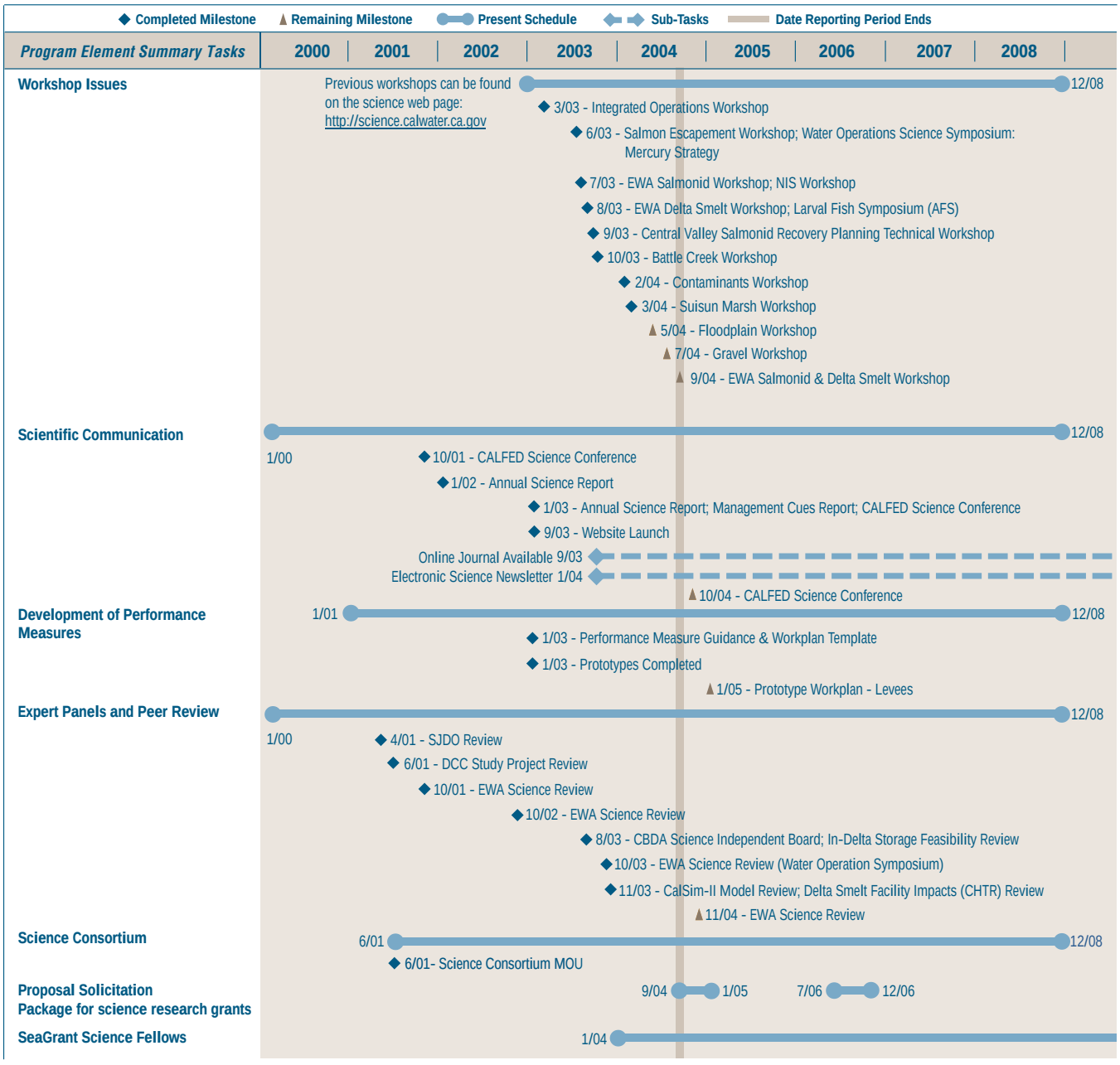
PROJECT HIGHLIGHT

## Tidal Marsh, Wetlands and Floodplain Research

*Recent research on floodplain habitat – an important but limited habitat for species of concern in the Bay-Delta region – comes from two sites: the Cosumnes River and the Yolo Bypass on the Sacramento River. The Yolo Bypass was constructed in the 1930s to route excess floodwaters through land used for agriculture and wildlife habitat when dry. The Cosumnes is unique because it has no large dams, making it the only river in the Bay-Delta region with a nearly unregulated hydrograph. Tidal marshes, another rare remnant habitat for special status species, are not static systems. They result from flows of energy and material, inputs and outputs that change each day (like the tides), over decades (like sediment supply) and over centuries (like sea level). Thus, wetland restoration must focus on details of water circulation, tidal action, sediment supply, the geomorphology of the area, and how these aspects change over time, to develop the potential for sustainable intertidal marsh habitat at project sites. Within these issues of tidal marsh, wetland, and floodplain research, CALFED-funded science is revealing that significant ecosystem restoration opportunities do exist and can provide benefits to native plants, fish, birds, and insects.*

- *Winter inundation of Yolo Bypass farmland provides high quality habitat for native fishes, indicating that land can be managed simultaneously for floods, farms and fish.*
- *Multiple, short-lived flood pulses followed by long draining periods may produce more phytoplankton than the simpler hydrograph of the Yolo Bypass. To restore ecosystem attributes of floodplains, managers may need to operate dams and flood control structures to vary the timing and duration of floodplain flows.*
- *Experimental breaching of levees on the Cosumnes River demonstrates that floodplains can be restored with benefits for native birds, bats, plants and fish.*
- *Some native fish species may not be as susceptible to seasonal stranding on floodplains as previously thought. This knowledge might lead to opportunities for greater flood control capacity on floodplains while moving towards restoration goals.*
- *By inundating floodplains early in the year, then allowing them to dry out, managers may be able to enhance native fish production while limiting the success of undesirable non-native fish.*
- *The quality rather than the quantity of food may be a limiting factor for some species of concern. Floodplain restoration has the potential to increase productivity in the San Francisco Estuary, because of the production of phytoplankton and zooplankton that can then flush to riverine systems.*
- *Science suggests that designing wetland restoration projects with accurate elevation data is critical to determining whether a project can support sustainable intertidal marshes and how much habitat can develop within a project site. Using new methods for precisely measuring elevation could help managers in their efforts.*
- *Recent work demonstrates that tule marsh restoration projects can flourish in the Delta if the base elevation is sufficient for vegetation to colonize. This indicates that enough sediment exists in the system now to allow growth of tule marshes in some regions of the Delta given proper elevations and the maintenance of hydrologic processes.*
- *Studies in Suisun Marsh show that salinity in the rooting zone influences regional vegetation patterns, suggesting that soil salinity provides an important environmental framework for other ecological interactions.*

## SCIENCE


Completed Milestone
Remaining Milestone
Present Schedule
Sub-Tasks
Date Reporting Period Ends
Program Element Summary Tasks
2000
2001
2002
2003
2004
2005
2006
2007
2008
Workshop Issues
Previous workshops can be found on the science web page: http://science.calwater.ca.gov
12/08
3/03 - Integrated Operations Workshop
6/03 - Salmon Escapement Workshop; Water Operations Science Symposium: Mercury Strategy
7/03 - EWA Salmonid Workshop; NIS Workshop
8/03 - EWA Delta Smelt Workshop; Larval Fish Symposium (AFS)
9/03 - Central Valley Salmonid Recovery Planning Technical Workshop
10/03 - Battle Creek Workshop
2/04 - Contaminants Workshop
3/04 - Suisun Marsh Workshop
5/04 - Floodplain Workshop
7/04 - Gravel Workshop
9/04 - EWA Salmonid & Delta Smelt Workshop
Scientific Communication
12/08
1/00
10/01 - CALFED Science Conference
1/02 - Annual Science Report
1/03 - Annual Science Report; Management Cues Report; CALFED Science Conference
9/03 - Website Launch
Online Journal Available 9/03
Electronic Science Newsletter 1/04
10/04 - CALFED Science Conference
Development of Performance Measures
1/01
12/08
1/03 - Performance Measure Guidance & Workplan Template
1/03 - Prototypes Completed
1/05 - Prototype Workplan - Levees
Expert Panels and Peer Review
12/08
1/00
4/01 - SJDO Review
6/01 - DCC Study Project Review
10/01 - EWA Science Review
10/02 - EWA Science Review
8/03 - CBDA Science Independent Board; In-Delta Storage Feasibility Review
10/03 - EWA Science Review (Water Operation Symposium)
11/03 - CalSim-II Model Review; Delta Smelt Facility Impacts (CHTR) Review
11/04 - EWA Science Review
Science Consortium
6/01
12/08
6/01- Science Consortium MOU
Proposal Solicitation Package for science research grants
9/04
1/05
7/06
12/06
SeaGrant Science Fellows
1/04

# OVERSIGHT & COORDINATION



The California Bay-Delta Authority and its staff are responsible for overseeing and coordinating the diverse activities associated with implementing the CALFED Program. Key functions of the Authority include integration of Program activities, oversight of activities that span multiple programs and multiple agencies, tracking Program funding and accomplishments, assuring public involvement and transparency in Program implementation, assisting with regional implementation of the Program, and supporting environmental justice and tribal activities associated with implementation of the Program.

## Summary of Accomplishments

The California Bay-Delta Authority was created by state legislation passed in 2002 as a separate state agency within the California Resources Agency to provide additional public oversight and transparency for the CALFED Program's decision-making process. The Authority includes a 24-member board composed of state and federal agency directors, public members, a representative of the Bay-Delta Public Advisory Committee, and ex officio elected officials.

Specific accomplishments within the Oversight & Coordination function include:

- Finance Plan adopted by the Authority that provides a framework for the Program defining funding targets and identifying long-term financing needed.
- Annual program plans updated and coordinated with implementing agencies and adopted by the Authority to provide strategic direction for individual Program elements.
- First draft CALFED Program Performance Measures Report produced giving examples of indicators for Program elements that form the basis for measuring progress towards Program objectives.
- Federal authorization secured or $389 million and federal agency participation on the Authority.
- Implementation coordinated for CALFED-related grant programs funded through Proposition 13, 204, and 50.
- Staff support provided for the Bay-Delta Authority and the Bay-Delta Public Advisory Committee (BDPAC). Working through nine subcommittees, BDPAC provides recommendations to the Secretary of the Interior, other federal agencies, the Governor, and the Authority, on all aspects of Program implementation.
- Regional profiles and strategies refined in coordination with DWR's California Water Plan to better integrate local planning and water management activities with those undertaken by various state and federal agencies to avoid duplicative efforts and better allocate scarce financial resources.
- Information and public forum provided for elected officials, stakeholders and the general public through enhanced communications, including media relations, electronic newsletters, annual reports, the web site and project-specific informational materials.
- Staff support provided for regular and issue-specific interagency committees, workgroups and task forces to share information and resolve differences in the way individual agencies meet operational and regulatory requirements.

Tribal Outreach:

- Extensive Tribal web site developed that will be available in early 2005.
- Monthly participation with the Statewide Native American Liaisons to share, network, discuss and present tribal statewide issues and concerns of California Tribal governments. Participated in the group's annual California Indian Days event in September at the State Capitol.
- Tribal outreach conducted throughout the state including briefings in coordination with the Bureau of Reclamation on the Shasta Lake Water Resource Investigation Study, and the Upper San Joaquin River Basin Storage Investigation and outreach regarding CALFED Program and other agency grant opportunities.
- Tribal relations integrated into the day-to-day implementation of CALFED Program elements through annual Program Plans.

# OVERSIGHT & COORDINATION

Environmental Justice Activities:

- Environmental justice goals, objectives, and performance measures developed for each Program element (ongoing).
- Environmental justice activities integrated into the day-to-day implementation of CALFED Program elements through the Bay-Delta Public Advisory Committee Environmental Justice Subcommittee, and the development of annual Program Plans.
- Extensive Environmental Justice Special Session conducted at the October 2004 CALFED Science Conference entitled, "Data and Advocacy – What is the role for Environmental Justice?" with guest speakers covering issues such as advocacy and science pertaining to mercury and fish consumption.

## 2004 Bay-Delta Public Advisory Committee Members & Subcommittees

### *Subcommittees*

Delta Levees & Habitat

Drinking Water

Ecosystem Restoration

Environmental Justice

Steering Committee

Watershed

Water Supply

Water Use Efficiency

Working Landscapes

### *Members*

**Gary Bobker**
The Bay Institute

**Denny Bungarz, Co-Chair**
Glenn County

**Christopher Cabaldon**
City Of West Sacramento

**Tom Clark**
Kern County Water Agency

**Marci Coglianese**
City of Rio Vista

**Martha Davis**
Inland Empire Utilities Agency

**Gregory Gartrell**
Contra Costa Water District

**David Guy**
Northern California Water Association

**Steve Hall**
Association of California Water Agencies

**Gary Hunt, Chair**
California Strategies, LLC

**Leslie Lohse**
Paskenta Band of Nomlaki Indians

**Robert Meacher**
Plumas County

**Jerry Meral**
Planning and Conservation League

**Barry Nelson**
Natural Resources Defense Council

**Dan Nelson**
San Luis & Delta-Mendota Water Authority

**Bill Pauli**
California Farm Bureau Federation

**Timothy Quinn**
Metropolitan Water District of So. California

**Mike Rippey**
Napa County

**Michael Schaver**
Big Valley Rancheria

**Frances Spivy-Weber**
Mono Lake Committee

**Maureen Stapleton**
San Diego County Water Authority

**O.L. "Van" Tenney**
Glenn-Colusa Irrigation District

**Marguerite Young**
Clean Water Action

**Thomas Zuckerman**
Central Delta Water Agency



## Legislative Actions

### Federal Reauthorization

H.R. 2828 (Calvert-Napolitano: PL 108-361). President Bush signed the Water Supply Reliability and Environmental Improvement Act (H.R. 2828) on October 25, 2004, authorizing the federal agencies to implement CALFED-related activities with existing authorization, and authorizing an additional $389 million in federal appropriations over the next six years for the CALFED Bay-Delta Program. The landmark legislation, authored by Representatives Ken Calvert and Grace Napolitano, was based on a compromise bill sponsored by Senators Dianne Feinstein and Barbara Boxer along with Senators Pete Domenici and Jeff Bingaman, Chairman and ranking member of the Energy and Natural Resources Committee. Working with House Resources Committee Chair Richard Pombo, they gained bipartisan support for the bill in both the House and Senate. The legislation provides federal authorization for a long-term collaborative plan for environmental restoration and enhancement of the San Francisco Bay/Sacramento-San Joaquin Delta estuary, as well as needed improvements in statewide water supplies, flood control and water quality.

### State Legislation

SB 1155 (Machado) Water Quality Standards (Chapter 612). This bill requires the state Department of Water Resources, in collaboration with the federal Department of the Interior, to prepare a plan to meet water quality standards in the Delta as set forth in Decision 1641 by the State Water Resources Control Board. The plan must be completed by Jan. 1, 2006, and is part of the Delta Improvements Package that outlines several actions related to water project operations in the Delta that will result in improved water supply reliability, including increased permitted pumping capacity, improved water quality, environmental protection and ecosystem restoration, and protection of the Delta Levee system.

AB 2572 (Kehoe) Water Meters (Chapter 884). Existing statutes already require water meters for municipal and industrial water service connections constructed after 1992. This bill applies to service connections built before 1992 and requires that water meters be installed on those prior to Jan. 1, 2025. It also requires that by Jan. 1, 2010 water providers must charge metered customers based on the volume of water used.

AB 318 (Alpert) Desalination (Chapter 688). This bill encourages policy makers at all levels of government to explore opportunities for desalination by requiring water suppliers to include in their Urban Water Management Plans a description of the opportunities for development of desalinated water. The bill says these opportunities should include, but not be limited to, ocean water, brackish water and groundwater. Urban Water Management Plans must be updated every five years, with the next cycle due by the end of 2005.

# Fiscal Information

## Funding Summary

Funding for the first four years of the CALFED Program (beginning in 2000 with the signing of the Record of Decision) is summarized in the following charts and tables. Funding over the first four years has been primarily from the state general fund and state bonds. Since the ROD, approximately $2.9 billion has been invested in water supply, water quality and ecosystem restoration programs and projects in the 51 counties that depend on the Bay-Delta system for all or part of their water needs. Of the $2.9 billion, approximately $1.5 billion has been contributed by the state; $1.2 billion from water users and local matching funds; and $200 million from federal taxpayers sources. Federal authorization of the CALFED Program was signed in 2004 and is expected to increase the federal funding for the Program. Remaining state bond funds are expected to be expended over the next two years.

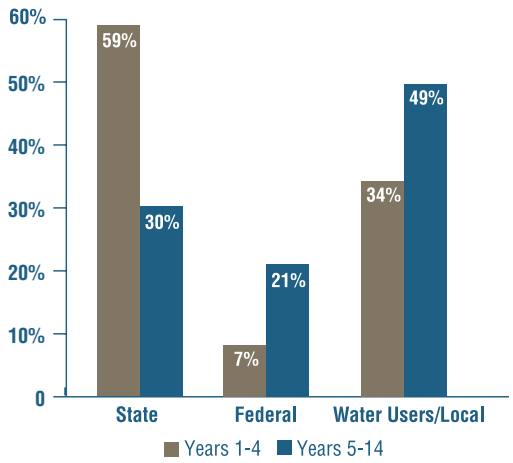
## Finance Plan

To address the need for additional funding for the CALFED Program, and to ensure the Program is supported by all beneficiaries, the California Bay-Delta Authority developed a Finance Plan that provides a framework to support critical water and environmental projects in California through 2014 (the next 10 years). Consistent with the beneficiary-pays principle in the ROD, the Plan provides a framework to allocate Program costs based on Program benefits.

**Finance Plan Highlights:**

- Establishes a set of principles to guide future funding decisions.
- Identifies program priorities, funding needs and beneficiaries across all CALFED activities, based on a comprehensive review.
- Reduces the average annual cost of the Program from $1.26 billion to $807 million per year - a 36 percent reduction.
- Reduces the state's overall contribution from 59 percent to 30 percent. State bonds or other new funding sources will be needed.
- Increases the federal contribution from 7 percent to 21 percent. New federal authorization for the CALFED Program is a significant step towards this goal.
- Increases water user and local contributions from 34 percent to 49 percent - from 6 to 9 percent for water users and from 28 to 40 percent for the local match.
- Identifies new water user fees for specific programs based on expected program benefits.

## Comparison of Past and Proposed Cost Shares




## CALFED Bay-Delta Program Finance Plan

*($ in millions)*

| Program Element | Funding Target | State | Federal | Water Users/Local |
|---|---|---|---|---|
| Ecosystem Restoration | $1,500 | $542 | $408 | $550 |
| Environmental Water Account | $438 | $180 | $135 | $123 |
| Water Use Efficiency | $3,153 | $575 | $530 | $2,048 |
| Water Transfers | $6 | $6 | | |
| Watershed | $423 | $196 | $161 | $66 |
| Water Quality | $276 | $81 | $72 | $123 |
| Levees | $446 | $186 | $175 | $85 |
| Storage | $1,087 | $292 | $36 | $759 |
| Conveyance | $185 | $109 | $6 | $71 |
| Science | $437 | $167 | $151 | $119 |
| Oversight & Coordination | $121 | $75 | $46 | |
| **Total Dollars** | **$8,073** | **$2,408** | **$1,722** | **$3,944** |
| **Total Percentage** | **100%** | **30%** | **21%** | **49%** |

# FISCAL INFORMATION

## CALFED Bay Delta Program[1] Years 1-4 Funding ($ in millions)

| Program Element | Total Years 1-4 | State Funding [2] | | | | | | Federal Funding [3] | | | Water User/Local Funding [4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General Fund | Prop 204 | Prop 13 | Prop 50 | Other State Funds[5] | State Subtotal | USBR | Other Federal[6] | Federal Subtotal | SWP | CVPIA RF | Local Grant Matching | User/ Local Subtotal |
| **Ecosystem Restoration** | 653.7 | 12.4 | 329.7 | 30.4 | 68.3 | 6.1 | 446.9 | 15.3 | 15.7 | 31.1 | 15.8 | 87.2 | 72.7 | 175.7 |
| **Environmental Water Account[7]** | 214.5 | 60.1 | 44.2 | 6.3 | 85.9 | | 196.5 | 17.5 | 0.5 | 18.0 | | | | |
| **Water Use Efficiency** | 636.6 | 25.9 | | 78.0 | 69.9 | 6.6 | 180.4 | 86.0 | | 86.0 | | | 370.2 | 370.2 |
| *Conservation* | *125.2* | *25.1* | | *39.0* | *35.9* | *6.6* | *106.5* | *6.4* | | *6.4* | | | *12.2* | *12.2* |
| *Recycling* | *486.4* | *0.8* | | *39.0* | *9.1* | | *48.8* | *79.6* | | *79.6* | | | *357.9* | *357.9* |
| *Desalination* | *25.0* | | | | *25.0* | | *25.0* | | | | | | | |
| **Water Transfers** | 2.1 | 1.7 | | | | 0.1 | 1.8 | 0.2 | | 0.2 | | | | |
| **Watershed** | 106.3 | 14.2 | | 19.7 | 44.1 | 1.1 | 79.1 | | 3.4 | 3.4 | | | 23.9 | 23.9 |
| **Drinking Water Quality[8]** | 93.8 | 16.9 | | 46.3 | 21.2 | 0.4 | 84.8 | | 2.4 | 2.4 | 0.8 | | 5.9 | 6.7 |
| **Levees** | 83.2 | 5.8 | 11.2 | 27.3 | 23.5 | | 67.8 | | 0.7 | 0.7 | 1.1 | | 13.5 | 14.6 |
| **Storage** | 900.9 | 39.2 | | 195.8 | 40.3 | | 275.2 | 25.6 | | 25.6 | 0.1 | | 600.0 | 600.1 |
| *Surface Storage[8]* | *84.0* | *22.9* | | *14.0* | *26.5* | | *63.4* | *20.5* | | *20.5* | *0.1* | | | *0.1* |
| *Groundwater Storage & Other* | *816.9* | *16.2* | | *181.7* | *13.8* | | *211.8* | *5.1* | | *5.1* | | | *600.0* | *600.0* |
| **Conveyance[8]** | 92.0 | 7.4 | | 36.6 | 0.6 | | 44.7 | 6.5 | | 6.5 | 32.9 | 8.0 | | 40.9 |
| **Science** | 87.0 | 18.0 | | | 20.8 | 4.1 | 42.8 | 21.4 | 7.8 | 29.2 | 14.2 | | 0.8 | 15.0 |
| *CBDA Science* | *41.6* | *16.9* | | | *20.5* | | *37.3* | *1.2* | *3.1* | *4.3* | | | | |
| *IEP* | *45.4* | *1.1* | | | *0.3* | *4.1* | *5.5* | *20.2* | *4.7* | *24.9* | *14.2* | | *0.8* | *15.0* |
| **Water Supply Reliability** | 27.5 | | | | 27.5 | | 27.5 | | | | | | | |
| **Oversight & Coordination** | 41.1 | 36.2 | | | | | 36.2 | 3.8 | 1.1 | 4.9 | | | | |
| **Grand Total** | **2,938.5** | **237.7** | **385.1** | **440.3** | **402.1** | **18.5** | **1,483.6** | **176.4** | **31.6** | **208.0** | **64.8** | **95.2** | **1,086.9** | **1,247.0** |

**1** The Bay Delta Authority tracks the cumulative spending and progress of several state and federal agencies toward planning objectives set forth in the ROD. The figures in this chart provide a broad overview of the cumulative funding by federal and state agencies under individual authorities and programs, many of which pre-date the ROD. While the agencies cooperate with each other through the Program, and they sometimes jointly fund or implement specific projects, they maintain their authority to make final decisions on their own projects.

**2** State funding includes bond funds, General Fund, and other state funding from the Resources Agency, California Bay-Delta Authority, Department of Water Resources, Department of Fish and Game, State Water Resources Control Board, Department of Forestry and Fire Protection, Department of Conservation, State Lands Commission, and the San Francisco Bay Conservation and Development Commission.

**3** Federal funding includes appropriations from the U.S. Bureau of Reclamation, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Environmental Protection Agency, and the National Marine Fisheries Service.

**4** Water User/Local funding includes State Water Project Funds and CVPIA Restoration Funds that are collected from state water contractors and Central Valley Project water users, but are budgeted and appropriated through the federal and state governments. Local grant matching funds are estimated and updated as information becomes available, and include the local share for Title XVI recycling projects.

**5** Includes DWR funds that contribute to the Water Conservation Program, SWRCB water rights funds that contribute to the Water Transfers Program, and Interagency Ecological Program (IER) funds from various departments that contribute to the Science Program. Also includes Ecosystem, Watershed, and Water Quality grant matching funds from state funding sources.

**6** Includes funding for ERP, EWA, Levees, Science, and Oversight & Coordination from the National Marine Fisheries Service, U.S. Fish & Wildlife Service, U.S. Geological Survey, U.S. Army Corps of Engineers, and the U.S. Environmental Protection Agency. Also includes Ecosystem, Watershed, and Water Quality grant matching funds that were from federal funding sources.

**7** Includes funding for EWA that was appropriated to the U.S. Bureau of Reclamation under the Conveyance Program. The federal budget cross-cut report required under the new CALFED Bay-Delta Authorization Act identifies this amount in the Conveyance element.

**8** Funding for three projects formerly included in the Conveyance Program has been shifted to more appropriate funding elements: San Luis Reservoir Low Point Improvement Project is now included under Storage, and Old River & Rock Slough Water Quality Improvement Projects and Franks Tract are now included under the Water Quality Program. Full transition of these projects to the respective Program elements will be reflected in 2005.

## CALFED Bay Delta Program[1] Year 5 Funding ($ in millions)

| Program Element | Total Year 5 | State Funding [2] | | | | | | Federal Funding [3] | | | Water User/Local Funding [4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General Fund | Prop 204 | Prop 13 | Prop 50[5] | Other State Funds[6] | State Subtotal | USBR | Other Federal[7] | Federal Subtotal | SWP | CVPIA RF | Local Grant Matching | User/ Local Subtotal |
| **Ecosystem Restoration** | 129.4 | 0.9 | 1.6 | 10.0 | 81.2 | | 93.7 | 5.7 | 1.6 | 7.2 | 7.3 | 21.2 | | 28.5 |
| **Environmental Water Account** | 33.7 | | | | 32.5 | | 32.5 | 1.0 | 0.2 | 1.2 | | | | |
| **Water Use Efficiency** | 232.6 | 1.5 | | 30.0 | 2.0 | 1.8 | 35.2 | 15.7 | | 15.7 | | | 181.7 | 181.7 |
| *Conservation* | *14.0* | *1.5* | | *8.3* | *0.6* | *1.8* | *12.1* | *1.9* | | *1.9* | | | | |
| *Recycling* | *218.4* | | | *21.7* | *1.2* | | *22.9* | *13.8* | | *13.8* | | | *181.7* | *181.7* |
| *Desalination* | *0.2* | | | | *0.2* | | *0.2* | | | | | | | |
| **Water Transfers** | 0.6 | 0.5 | | | | 0.1 | 0.6 | | | | | | | |
| **Watershed** | 28.6 | 0.1 | | | 28.5 | | 28.6 | | | | | | | |
| **Drinking Water Quality[8]** | 17.4 | 0.2 | | 14.0 | 0.7 | | 14.9 | | | | 2.5 | | | 2.5 |
| **Levees** | 25.0 | | | | 21.4 | | 21.4 | | 0.2 | 0.2 | 0.4 | | 3.0 | 3.4 |
| **Storage** | 359.4 | 0.3 | | 79.2 | 12.8 | | 92.3 | 4.0 | | 4.0 | 0.1 | | 263.0 | 263.1 |
| *Surface Storage[8]* | *10* | | | | *6.4* | | *6.4* | *3.5* | | *3.5* | *0.1* | | | *0.1* |
| *Groundwater Storage & Other* | *349.4* | *0.3* | | *79.2* | *6.4* | | *85.9* | *0.5* | | *0.5* | | | *263.0* | *263.0* |
| **Conveyance[8]** | 38.9 | 1.0 | | 10.3 | | | 11.3 | 4.0 | | 4.0 | 23.5 | | | 23.5 |
| **Science** | 26.8 | | | 2.0 | 13.4 | 0.2 | 15.7 | 3.0 | 1.7 | 4.7 | 6.2 | | 0.2 | 6.4 |
| *CBDA Science* | *15.9* | | | *2.0* | *13.1* | | *15.1* | | *0.8* | *0.8* | | | | |
| *IEP* | *10.9* | | | | *0.3* | *0.2* | *0.5* | *3.0* | *0.9* | *3.9* | *6.2* | | *0.2* | *6.4* |
| **Water Supply Reliability** | 1.8 | | | | 1.8 | | 1.8 | | | | | | | |
| **Oversight & Coordination** | 8.2 | 7.4 | | | | | 7.4 | 0.5 | 0.3 | 0.8 | | | | |
| **Grand Total** | **902.3** | **12.0** | **1.6** | **145.5** | **194.4** | **2.1** | **355.5** | **33.9** | **3.9** | **37.7** | **40.0** | **21.2** | **447.9** | **509.1** |

**1** The Bay Delta Authority tracks the cumulative spending and progress of several state and federal agencies toward planning objectives set forth in the ROD. The figures in this chart provide a broad overview of the cumulative funding by federal and state agencies under individual authorities and programs, many of which pre-date the ROD. While the agencies cooperate with each other through the Program, and they sometimes jointly fund or implement specific projects, they maintain their authority to make final decisions on their own projects.

**2** The year 5 state budget includes bond funds, General Fund, and other state funding from the California Bay-Delta Authority, Department of Water Resources, Department of Fish and Game, State Water Resources Control Board, Department of Forestry and Fire Protection, Department of Conservation, State Lands Commission, and the San Francisco Bay Conservation and Development Commission.

**3** Enacted FY 2005 federal funding includes appropriations from the U.S. Bureau of Reclamation, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Environmental Protection Agency, and the National Marine Fisheries Service. Federal FY 2005 enacted funding is subject to further reductions if required by applicable Appropriation Act language and/or agency delays in program execution.

**4** Water User/Local funding includes State Water Project Funds and CVPIA Restoration Funds that are collected from state water contractors and Central Valley Project water users, but are budgeted and appropriated through the federal and state governments. Local grant matching funds are estimated and updated as information becomes available, and include the local share for Title XVI recycling projects.

**5** Regarding statewide Prop 50 funding, additional funding (not shown in this table) is available in FY 04-05 for Drinking Water Quality (chapters 4, 5, & 6) and Integrated Regional Water Management (chapter 8). A portion of this funding is expected to support CALFED Bay-Delta Program objectives.

**6** Includes DWR funds that contribute to the Water Conservation Program, SWRCB water rights funds that contribute to the Water Transfers Program, and Interagency Ecological Program (IEP) funds from the Department of Fish & Game that contribute to the Science Program.

**7** Includes funding for ERP, EWA, Levees, Science, and Oversight & Coordination from the National Marine Fisheries Service, U.S. Fish & Wildlife Service, U.S. Geological Survey, U.S. Army Corps of Engineers, and the U.S. Environmental Protection Agency.

**8** Funding for three projects formerly included in the Conveyance Program has been shifted to more appropriate funding elements: San Luis Reservoir Low Point Improvement Project is now included under Storage, and Old River & Rock Slough Water Quality Improvement Projects and Franks Tract are now included under the Water Quality Program. Full transition of these projects to the respective Program elements will be reflected in 2005.

# The Sacramento Valley

## The Sacramento Region:

- *Contributes 60 percent, or 22 million acre-feet of water flowing into the Delta.*
- *Provides water supply for much of California from Sacramento Valley runoff.*
- *Offers major habitat/spawning ground for several threatened and endangered fish species.*
- *Contributes significantly to the state's farmlands and agriculture output.*
- *Provides major resting areas for the Pacific flyway waterfowl.*
- *Provides a dynamic hydrologic interaction between rivers and aquifers, which benefits fisheries, habitat, and wildlife.*

## Innovative Partnerships

Several integrated regional programs exist in the Sacramento Valley that are meeting local water needs for farms, wildlife refuges, cities and local communities and the environment. Many of these programs will help implement the CALFED Plan and will provide benefits to the Bay-Delta and the rest of the state. These exciting and innovative partnerships include the Sacramento Valley Water Management Program, the Northern Sacramento Valley Water Forum, the Sacramento River Conservation Area Forum, Sacramento Valley Water Quality Coalition, the Sacramento River Watershed Program, and the Four-County Water Quality Partnership.

## Regional Priorities and Issues

- Provide wildlife friendly agricultural practices and landowner assurances associated with projects to restore habitat function in areas dominated by agricultural uses.
- Enhance regional water supply reliability and flexibility to accommodate local water-short areas by improving water diversions for agriculture, environmental, urban within the region prior to export to other areas.
- Protect source water quality and preserve water rights.
- Improve flood management through watershed, habitat, and levee restoration, surface storage, and fish barrier removal for better protection of agricultural and urban areas.
- Preserve water quality for all beneficial uses through source control, mine remediation and habitat improvements.
- Enhance the Sacramento River recreational fishing and local economic development.
- Increase local resource development by local/regional/ CALFED partnerships in all areas of the watershed.
- Provide regulatory certainty associated with participation in conservation easements and habitat restoration.

## Statewide Benefits:

Many Sacramento Valley actions directly benefit other regions. These include:

- Improving source water quality improves water quality throughout the Bay-Delta system
- Creating new surface storage, which when used conjunctively with groundwater storage, will improve water quality and flexibility for water supply reliability.
- Improving diversions with fish-friendly screens and barrier removal and other habitat improvements contributes to greater overall populations of salmon in the Sacramento River and Bay-Delta system, allowing for better water supply reliability throughout the state.
- Improving upper watershed management increases water supply reliability and water quality for the Delta system.
- Expanding Shasta Dam would provide statewide benefits including water supply reliability and ecosystem benefits to aquatic species.
- Constructing North of Delta offstream storage can provide statewide benefits including water supply reliability, improved water quality, and ecosystem benefits, as well as contributing water and storage to the Environmental Water Account.



## Regional Accomplishments

### Water Supply Reliability

- $35.7 million invested in 37 local projects to improve groundwater management and expand conjunctive use in the Sacramento Valley, with a potential water supply yield of 36,300 acre-feet annually.
- Progress made on studies for potential north-of-Delta offstream storage and Shasta Lake enlargement. The proposed projects are among five surface storage options being studied to increase storage capacity and provide flexibility to the state's water system.
- $11 million in grants awarded for agricultural and urban water use efficiency programs.
- Water transfers streamlined and transfer agreements facilitated that protect local water users, economies and ecosystems.

### Water Quality

- Investments made in regional water quality planning activities in Butte, Colusa, Glenn and Tehama Counties.
- The Ecosystem Restoration and Watershed Management Programs have provided $1.2 million to investigate sources of mercury in the Sacramento River watershed, including an inventory of abandoned mine sites.
- $4 million has been provided to develop and evaluate practices to reduce organophosphate pesticide runoff and provide education to agricultural and urban users to improve water quality.

### Ecosystem Restoration and Watershed Management

- $183 million invested in 143 local ecosystem projects, including 53 fish passage improvement projects. Recently funded projects include riparian restoration along the Sacramento River near Hamilton City and research to study Sacramento River flows that can restore the river's ecosystem.
- The Watershed program has funded 55 projects for $27 million for local groups to do watershed assessments and develop watershed plans, monitoring, and implement watershed restoration activities in the Sacramento River watershed.
- The Watershed program has provided funds for 24 watershed coordinators to assist with community based management efforts within the region.

# THE DELTA

## The Delta Region:

- *Relies on over 1,100 miles of levees to protect the resources in the Delta and the conveyance system through the Delta.*
- *Encompasses a 750,000 acre area which includes sloughs and islands, cities and towns, as well as a viable agricultural base.*
- *Provides aquatic and terrestrial habitat for over 750 species of plants and animals.*
- *Operates as the hub of California's water system, supplying water to cities in the Bay area and Southern California as well as to farms in the San Joaquin Valley.*
- *Provides an important recreation area that supports many different activities.*

## Innovative Partnerships

The Delta Protection Commission has been charged with regional planning for the "heart" of the Delta. This includes land uses and resource management for the Delta area. Key land uses are agriculture, wildlife habitat and recreation. The Commission, as a CALFED agency, works closely to keep local stakeholders informed about how the CALFED Program is being implemented and brings their concerns and suggestions forward.

## Regional Priorities and Issues

- Preserving a viable agricultural base.
- Maintaining strong levees.
- Protecting water quality for agricultural and urban water users in and around the Delta.
- Protecting and increasing recreational opportunities.
- Restoring healthy ecosystems to benefit native species.

## Statewide Benefits

Many Delta actions directly benefit other regions. These include:

- Improving habitat in the Delta helps protects the anadromous fish that pass through the Delta to other regions.
- Improving levee reliability in the Delta also protect water quality and supply for exporters.
- Partnering with local efforts to support wildlife-friendly agriculture can help restore fish and wildlife populations while protecting the viability of agriculture.
- Protecting water quality in the Delta is also important for water users that divert from the Delta.
- Maintaining Delta recreational resources benefits anglers, boaters, and recreational interests from other areas.
- Restoring habitat in the Delta benefits recreational users and improves water supply reliability.

## Regional Accomplishments

### Water Supply Reliability

- CVP and SWP Operations Criteria (OCAP) Biological Assessment finalized laying the foundation for current and future CVP and SWP Operations.
- Delta Improvements Package adopted that includes a number of key ROD activities that are linked together in order to improve CALFED objectives.
- Pilot study completed on the hydrodynamics and fisheries near the CVP/SWP intakes in the south Delta.
- Modeling studies completed for the Delta Mendota Canal and California Aqueduct Intertie environmental documentation and conceptual design work initiated.




- Two years of research and experiments conducted on Delta Cross Channel re-operation as well as water quality monitoring and fish tracking studies. Preliminary results were presented at public workshops. Pilot study on new technology equipment conducted to determine fish progress in Georgiana Slough.
- $15.7 million invested in 35 local agricultural and urban water conservation programs.
- $43 million in grants awarded to increase water recycling by 3,500 acre-feet a year.
- Site-specific diversion improvements installed to assure water supply to south Delta farms.
- Draft engineering feasibility study completed for in-Delta storage project. Further investigations are underway related to the water quality, risk, structural relocations and economics. Information collected during the 2004 Upper and Lower Jones Tract flooding will be used in further evaluations.

## Water Quality

- Progress on temporary barriers continued for the South Delta Improvements Program while environmental documentation is prepared on the permanent agricultural and fish barriers associated with the increased South Delta Improvements Program.
- Hydrodynamic and modeling studies for Franks Tract initiated.
- Program established to monitor dissolved oxygen and other parameters in the Bay-Delta and San Joaquin River through Ecosystem Restoration Program.
- Funding provided to construct the Rock Slough and Old River Water Quality Improvement Projects, which will complete construction in 2005.
- Substantial progress made on Delta water quality modeling of conveyance and storage alternatives. Water quality modeling in the Delta will use the recently collected water quality information from Upper and Lower Jones Tract flooding due to the Middle River Levee Breach.
- $25 million invested in 9 projects to evaluate how restoration actions may impact Delta water quality, including mercury and organic carbon.
- $4 million invested in research projects to determine sources and cycling of selenium in the estuary and evaluate impacts to aquatic life.
- $7 million invested in research projects to evaluate the effects of contaminants on key species of concern, including anadromous salmonids, Delta smelt, Sacramento splittail and sturgeon.

## Ecosystem Restoration and Watershed Management

- The Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) is the first of four regional plans intended to guide the implementation of the CALFED's Ecosystem Restoration Program. More information on the plan and projects can be obtained at www.delta.dfg.ca.gov/erpdeltaplan/version2/.
- 17 projects supported with more than $4 million so that community organizations can do watershed assessments, citizen monitoring and carry out restoration activities on watersheds in the Bay and Delta regions.

## Levee System Integrity

- Funding provided to improve 43 miles of Delta levees up to the PL 84-99 limit to date.
- Approximately 900,000 cubic yards of dredged material reused to increase levee stability while enhancing habitat to date.
- 15 acres of new tidal marsh habitat created on Decker island in year 4.
- Phase I of Seismic Risk Study completed in year 4.
- A comprehensive reassessment of Delta levees initiated based on issues surrounding the importance and stability of Delta levees as a result of the unanticipated flooding of Jones Tract.
- Emergency response capabilities improved through a draft Multi-Agency Emergency Response Plan that increased coordination and acquisition of flood fight materials.
- Studies initiated to analyze seismic risk to Delta levees.
- Funding for 3 watershed coordinators provided to assist with community based management efforts within the region.

# THE BAY

## The Bay Region:

- *The Bay region is the fourth largest metropolitan area in the United States and the second largest in California, with water supply reliability and drinking water quality issues becoming even more challenging in the future.*
- *The Bay and adjoining Delta comprise the West Coast's largest estuary.*
- *The Bay region drains more than 40 percent of the state's water.*
- *The Bay has lost over 75 percent of its vital wetlands.*

## Innovative Partnerships

- Integrated Regional Water Management Planning in the Bay Area: Water districts, storm water management agencies, sanitation districts, and cities and counties around the Bay are exploring the development of an integrated regional water management plan.
- Association of Bay Area Governments (ABAG) Task Force and Bay Area Water Forum: Local elected officials and elected water district board members established a task force in 2000 to promote the Bay-Delta program in the Bay Area. In 2004, this group began to meet as the Bay Area Water Forum to better include business and environmental groups as they focus on developing concerns on water management issues such as the Integrated Regional Water Management Plan.
- Bay Area Water Agencies Coalition (BAWAC): Seven Bay Area water agencies joined together in 2002 to improve coordination and cooperation so they work to meet the region's water quality and supply reliability challenges.

## Regional Priorities And Issues

- Improve ecosystem health in the San Francisco Bay and its tributary watersheds to contribute to the overall resilience of the Bay-Delta estuary.
- Improve drinking water quality across the region by continuing to meet and exceed current drinking water standards.
- Improve water supply reliability across the region to protect the environment and public health as well as economic health and quality of life.

## Statewide Benefits

Many actions taken in the Bay benefit other regions. These include:

- Improving regional cooperation on water quality improvements can help take pressure off Delta diversions during droughts and other emergencies.
- Restoring wetlands in the Bay contributes to improved overall health of the estuary.
- Improving water quality in the Bay and its watersheds help support healthy anadromous fish populations.
- Constructing Los Vaqueros expansion can provide statewide benefits by contributing water and storage for the Environmental Water Account.



## Regional Accomplishments

### Water Supply Reliability

- $3 million invested in five local projects to improve groundwater management and expand conjunctive use in the Bay and Delta regions, with a potential water supply yield of 365 acre-feet annually.
- The Bay Area Regional Water Recycling Program was included in the federal CALFED authorization bill.
- In March 2004, voters in Contra Costa County approved a ballot measure to move forward on Los Vaqueros reservoir expansion studies.
- $2.4 million invested in eight local projects to study and expand groundwater storage.
- Significant progress made on studies for proposed expansion of Los Vaqueros Reservoir. The project is one of five surface water storage options under evaluation to add storage capacity and flexibility to the water system.
- Feasibility studies are underway on San Luis Low Point Improvement Project to address water quality and conveyance issues for South Bay water users.
- $15.7 million invested in 35 local agricultural and urban water conservation programs.
- $43 million in water recycling grants awarded to increase water recycling by 3,500 acre-feet a year.

### Water Quality

- More than $19 million invested in 21 projects including implementation of best management practices in the Delta and along the North Bay and South Bay Aqueducts, the development of a Delta regional drinking water quality management plan, support for the development and construction of continuous monitoring stations at key Delta locations.
- Funding provided for the Bay Area Water Quality/Water Supply Reliability Project, which will be completed in 2005 and the regional planning is transitioning over to a local stakeholder group.

### Ecosystem Restoration and Watershed Management

- 30 projects supported with more than $16.2 million in funds for community organizations to do watershed assessments, citizen monitoring and carry out restoration activities on watersheds in the Bay and Delta regions.
- $177 million invested in 145 local ecosystem projects, including 35 shallow water tidal and marsh habitat restoration. Recently funded projects include two ecosystem water quality studies: one investigating mercury cycling in Petaluma River and one investigating the bioaccumulation of methylmercury in birds and its effects on their reproduction.
- Funding provided for 6 watershed coordinators to assist with community-based management efforts within the region.

# San Joaquin Valley

## The San Joaquin Valley Region:

- *Supplies 45 percent of the nation's fruits and vegetables.*
- *Has the three largest agricultural counties in the Nation based on gross receipts.*
- *Provides drainage for seven major Sierra Nevada rivers.*
- *Provides major resting areas for the Pacific flyway waterfowl.*
- *Contains 12 different groundwater basins - six are subject to critical overdraft.*
- *Anticipates population to double in the next 20 years.*

## Innovative Partnerships

The San Joaquin Valley is rich in agricultural and natural resources. CALFED agencies are contributing to local initiatives aimed at restoring and enhancing ecological, water supply, and water quality resources. Ongoing programs in the region include:

- State and federal resource agencies are working with landowners and local irrigation districts to restore the ecological health of the valley's rivers, particularly on the Tuolumne and Merced Rivers.
- DWR is working with local groundwater management agencies to investigate the potential for aggressive conjunctive use programs.
- San Joaquin River watershed interests are working with agencies to develop long-term solutions to solve the dissolved oxygen deficit in the lower San Joaquin River and improve water quality conditions.

## Regional Priorities and Issues

- Expand existing or construct new facilities to increase water supply reliability, improve water quality, and contribute to restoration in the San Joaquin River.
- Develop and support locally managed conjunctive use programs.
- Recover at-risk native species by restoring habitat and rehabilitating natural riverine processes.
- Contribute to improved public health by improving water quality, particularly in the lower San Joaquin River.

## Statewide Benefits

As progress is being made on improving local water supply reliability, water quality, and the health of the ecosystem, these regional actions provide benefits to the state as a whole, including:

- Reducing Delta demand during critical periods by increasing the use of groundwater storage (e.g., Kern Water Bank).
- Improving tributary ecosystems contribute to improving the overall health of the estuary and its native species.
- Improving regional water quality in the San Joaquin River and its tributaries reduces the need for high quality water from the Delta.
- Investing in local efforts to restore watersheds contributes to the overall environmental and economic health of the region.
- Increasing utility of water supplies by streamlining water transfers and investing in local water use efficiency projects reduces regional demands on the Delta.

Photo courtesy of the CA Farm Water Coalition



## Regional Accomplishments

### Water Supply Reliability

- $77 million invested in 55 local projects to improve groundwater management and expand groundwater storage in the San Joaquin Valley, with a potential water supply yield of 94,500 acre-feet annually.
- $8.6 million invested in agricultural water conservation programs that will save 8,524 acre-feet of water per year. Another $3.1 million invested in local urban conservation programs.
- Milestones adopted for agricultural conservation to help evaluate regional progress and identify barriers to implementation.
- Progress made on developing an on-farm water efficiency incentive program with significant public input.
- Water supply reliability improved and conflicts over Delta exports reduced through Environmental Water Account actions.
- 70 percent water supply delivery target achieved for CVP contractors.
- Progress made on Upper San Joaquin River Basin storage studies, one of five potential surface storage projects currently under evaluation.

### Water Quality

- More than $33 million invested in 20 projects, including implementation of best management practices and other types of projects which contribute to reducing salinity in the San Joaquin River.
- A basin plan amendment for the control of salinity and boron in the lower San Joaquin River was completed. A group of stakeholders have formed the San Joaquin River Water Quality Management Group to implement projects to meet the objectives.
- $11 million provided for 8 projects to address water quality issues in the San Joaquin region, which includes $2.7 million to address selenium and salinity from the Grasslands district, including development of a real-time monitoring system and a pilot-scale treatment project.

### Ecosystem Restoration and Watershed Management

- 20 projects funded for approximately $9 million in the San Joaquin region for local groups to improve water quality and enhance watershed stewardship.
- $96 million invested in 53 local ecosystem projects, including 16 channel dynamics and sediment transport projects and dissolved oxygen monitoring and investigations in the San Joaquin River and tributaries.
- Funding provided for 7 watershed coordinators to assist with community based management efforts within the region.

# SOUTHERN CALIFORNIA

## The Southern California Region:

- ***Accommodating growth – half of California's anticipated new residents will reside in the semi-arid Southern California region.***
- ***Securing adequate supplies of high quality water to achieve economic potential in the region and state.***
- ***Working to ensure continued water supply reliability and improved water quality through investment in local sources of water and innovative technology and approaches.***

## Innovative Partnerships

Southern California uses integrated planning to manage diverse water resources including imported water from the Delta, Colorado River, and the Eastern Sierra, local groundwater supplies, recycled water, conserved water, and desalinated brackish water.

Stakeholders representing environmental, water, wastewater, flood control, watershed, wetlands, agricultural, environmental justice, business, and community interests are successfully collaborating in regional water supply and watershed planning and coordination efforts. The Metropolitan Water District of Southern California, Santa Ana Watershed Project Authority, and Southern California Water Dialogue are among the groups facilitating this collaboration.

## Regional Priorities and Issues

The Southern California region is planning and implementing multiple projects to assure a sustainable water supply for the future. These projects will increase the region's water supply options to meet the needs of the growing region. Regional goals include:

- Producing drinking water supplies that meet or exceed increasingly stringent state and federal standards.
- Maximizing use of groundwater basins by expanding storage, conjunctive use, and groundwater cleanup programs.
- Expediting water use efficiency projects including conservation, reclamation, and water management programs.
- Expanding watershed partnerships, developing watershed management plans, and developing integrated solutions to restore ecosystems and manage polluted storm water run off.
- Developing mutually beneficial water transfer or water exchange programs.
- Reducing organic carbon and bromide levels in imported water.
- Reducing salinity levels in imported water the overall salt balance of the region.
- Initiating ocean water desalination test projects.
- Using infrastructure enhancements to complement imported water supplies.



## Statewide Benefits

Most projects and programs implemented in Southern California benefit the Delta by giving the region the flexibility to reduce dependence on the Delta during critical periods. These efforts include:

- Increasing storage capacity through conjunctive use reduces demand on the Delta. Southern California produces an average 1.3 million-acre feet of groundwater per year. During droughts, groundwater production can increase by approximately 500,000 acre-feet.
- Increasing water conservation and recycling projects.
- Achieving the annual use of approximately 500,000 acre-feet of recycled water (this includes the Orange County Water District reuse of the Santa Ana River), 100,000 acre-feet of desalinated brackish groundwater, and the conservation of 480,000 acre-feet.
- Developing new treatment technology and water quality exchanges to improve Southern California drinking water quality of both imported and groundwater.
- Investing and managing for healthy watersheds that can improve Southern California water quality and provide other local water management benefits.
- Developing and funding desalination technology to help continue supply reliability through diversified resource supplies.

## Regional Accomplishments

### Water Supply Reliability

- Partnerships forged for groundwater planning with local agencies in six areas.
- $133.7 million invested in 44 local projects to improve groundwater management and expand groundwater storage in Southern California basins, with a potential water supply yield of more than 126,200 acre-feet annually.
- Water conservation is reducing demand in the region. The Family of Southern California Water Agencies (MWD member agencies and other regional partners) has launched a far-reaching program to promote water efficient landscaping and irrigation.
- $440 million in local, state and federal funds invested in water recycling programs that will recycle more than 408,000 acre-feet of water a year.
- Water supply reliability improved through the Environmental Water Account.
- Local water supplies augmented through water transfers facilitated by CALFED agencies.
- More than $3 million invested in aquifer supply reclamation projects in San Bernardino County.
- $5 million invested in recycled water distribution (Inland Empire Utilities Agency) and recycled water studies (San Diego County Water Authority).

### Water Quality

- More than $8 million invested in 6 projects, including the development of a Southern California regional drinking water quality management plan.
- Water quality improvements supported in terminal Southern California reservoirs and in groundwater replenishment projects.
- Funding provided for Desalination Research and Innovation Partnership (DRIP). The project already has resulted in development of advanced reverse osmosis membranes.

### Ecosystem Restoration and Watershed Management

- More than $4 million provided in funds for 9 projects in Southern California to develop watershed management plans, perform monitoring and provide outreach and education with emphasis on improving water supply reliability and decreasing dependence on water imported from the Bay-Delta.
- Funding for 8 watershed coordinators provided to assist with community-based management efforts within the region.

*The mission of the CALFED Bay-Delta Program is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta.*

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